Service Manual

7000	CODE No. 2072–200
α 7000	CODE No. 2072–400
MAXXUM 7000	CODE No. 2072–600

Includes Parts List For

AF 50/1.7
2550 -100 -600

AF 50/1.4
2562 -100 -600

MINOLTA

MINOLTA 7000 (2072-200)·····Black
MINOLTA α 7000 (2072-400)·····Black
MINOLTA MAXXUM 7000 (2072-600)·····Black

TYPE OF CAMERA

35mm SLR camera with autofocus, automatic exposure, and auto film transport controlled by microcomputers.

Exposure mode : Programmed auto-exposure ; aperture-priority auto-exposure ; shutter speed-priority auto-exposure ; metered manual exposure

Standard lens : MINOLTA A LENS 50mm F1.7
50mm F1.4

Lens mount : Minolta A mount

Film : 35mm cartridge film

Film-frame size : 24mm × 36mm

SHUTTER

Electronically controlled vertical-traverse focal-plane type

Shutter speed : P, A modes : 1/2000 to 30 sec (stepless),
S, M modes : 1/2000 to 30 sec (with 1-EV settings), 1/100, B (only in M mode)

Shutter release : Electromagnetic shutter release ; with remote control terminal ; shutter locks when battery voltage is low

Operating button : With touch switch : metering and indication remain ON for 10 sec after the finger is removed from the touch switch ; with click stop on the half way
Touch switch ; activates metering and indication
Depressing halfway ; activates autofocusing and indication
Depressing all the way ; releases shutter

Slow shutter speed warning : Audible beeping with main switch in P and A modes, shutter-speed of warning is automatically change to match focal length of lens in use

For focal length	
shorter than 35mm	1/20 sec or slower
from 35mm to 105mm	1/45 sec or slower
longer than 105mm	1/100 sec or slower

Self-timer : Electronic with 10-sec delay ; started by depressing operating button ; operation indicated by LED blinking, and by beeping sound with main switch in position ; countdown timer in data panel ; cancelable before shutter release.

FLASH SYNC

Type : TTL Direct Autoflash Metering (P, S, A, M modes)

Contact : Four contacts on hot shoe ; Direct contact at bottom of body for CONTROL GRIP

Sync speed : P, S modes···automatically set at 1/100 or 1/60 sec
A mode···automatically set at 1/100 sec; slow shutter sync possible by engaging AE lock
M mode···1/100, 1/60 to 30 sec ; set at 1/100 sec for manually set speed of 1/125 sec or faster

AF-assist : By pre-emission of light

FILM WINDING, REWINDING

Type : Automatic winding, rewinding

Winding : Two drive modes, Single frame advance (S), continuous advance (C) up to 2 fps

Film loading : Auto loading (auto advance to first frame by closing back cover)

End of roll : Warning by frame counter blinking, and by beeping sound with main switch

Rewinding : Started by setting rewind-release and rewind-switch, Auto rewind stop with film all taken into cartridge

VIEWFINDER

Type : SLR pentaprism type (fixed)

Focusing screen : Accute-Matte focusing screen with focus zone ; interchangeable by user (4 kinds)

Field of view : 94% of 24 × 36mm film-frame area

Magnification : 0.85× with 50mm standard lens focused at infinity

Dioptric power : 1 diop.

Lighting : Bulit-in LED to light viewfinder indication : automatically turned ON with BV 2.5 or lower

Mirror : Fixed-hinge type quick return mirror (with half-mirror, sub-mirror)

VIEWFINDER INDICATION

Exposure indication (LCD) : Exposure mode, shutter speed, film speed (ISO setting), aperture, metering out-of-range warning, metered manual pointers, exposure adjustment reminder +/−

Flash indication : Flash-ready signal (2Hz) and FDC signal (8Hz) indicated by blinking ϟ (red LED)

Focus indication : Autofocus
- In-focus indication "●" (green LED) glows
- Too-close warning "▶" (red LED) glows
- Unmeasurable warning "▶◀" (red LED) blinks

Manual focus
- In-focus indication "●" (green LED) glows
- Far-focus/near-focus indication "▶" or "◀" (red LED) glows
- Unmeasurable warning "▶◀" (red LED) blinks

LCD IN DATA PANEL (BODY LCD)

Exposure indication : Exposure mode, shutter speed, film speed (ISO setting), aperture, exposure adjustment, "ISO", exposure adjustment reminder +/−, reminder manual setting.

Drive indication : Single frame advance (S), continuous advance (C), self-timer (S.T)

Counter : Frame counter, self-timer count down, bulb elapsed time

METREING CONTROL

Metering : TTL center-weighted averaging type; full-aperture metering; Direct (TTL off-film) Metering with exclusive flash

Receiver element : 2 Silicon photocells, above of eyepiece; at bottom of mirror box

Auto expousre range : EV-1 to 20 with ISO 100 film and f/1.4 lens

Film speed range : ISO 25 to 6400 with 1/3-EV settings; flash control range: ISO 25 to 1000 with 1/3-EV settings

AE lock : In P, A, S modes, depressing AE lock button holds metering and indication; Slow shutter sync possible with AE lock in A mode

Exposure adjustment : Up to ±4 EV with 1/2-EV settings

Program : One of three programs (NORMAL, WIDE, TELE) is automatically set to match focal length of lens; program is shiftable by shutter speed or aperture keys; flash program automatically set with exclusive flash

AUTOFOCUS

Type : TTL phase-detection type

Working : BV-2 to 13

Focus sensor : CCD

Indication : In-focus indication; viewfinder LED and beeping sound with main switch •))) Unmeasurable warning; viewfinder LED

Focusing : Activated by depressing halfway operating button, and locked with focus-in; manual focusing possible by changing focus-mode switch to M

POWER

Battery : Four batteries are used from one of the following types:

Type	AM4	AM3	SUM3	NR-AA
*Number of films	25 rolls	65 rolls	20 rolls	20 rolls
KODACOLOR VR 100 24 EXP.				

※Number of film per set of batteries. As determined by Minolta's standard testing method.

: Built-in lithium battery for memory backup, lasts 10 years or more

Battery check : Auto check whille exposing; warning by viewfinder indication and body LCD.
All indicators blink...when near exhaustion→replace with fresh batteries.

Main switch : Sliding switch with LOCK (OFF), ON, •))) positions;
•))) for beeping indication when; slow-shutter-speed, in-focus, end of roll, self-timer operation

OTHER

Back cover : Interchangeable; with grip, film window

DIMENSIONS & WEIGHT

Dimensions : 138mm(W)×91.6mm(H)×52.2mm(D)

Weight (body only) : 525 g (without batteries)

2072 mechanism description contents

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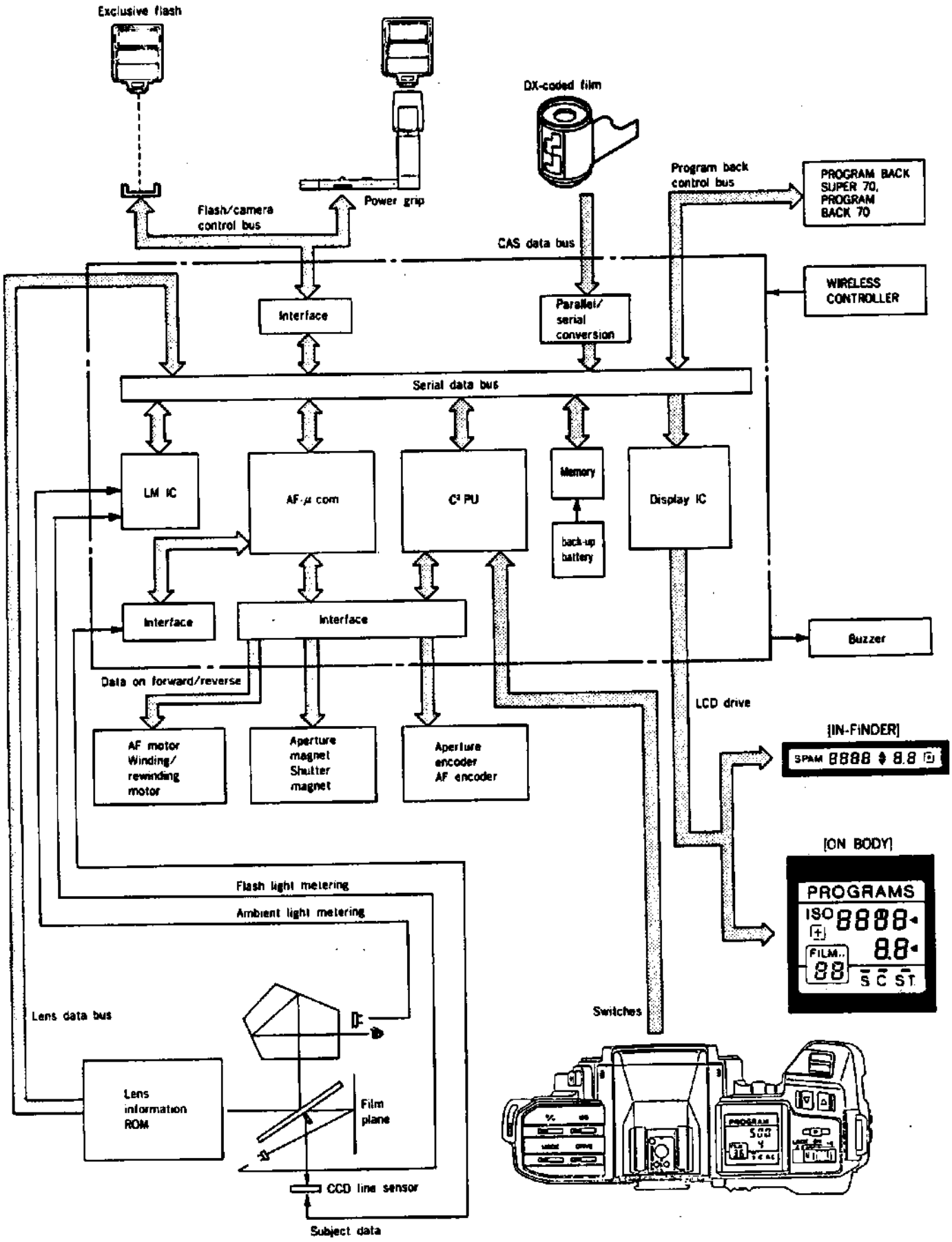
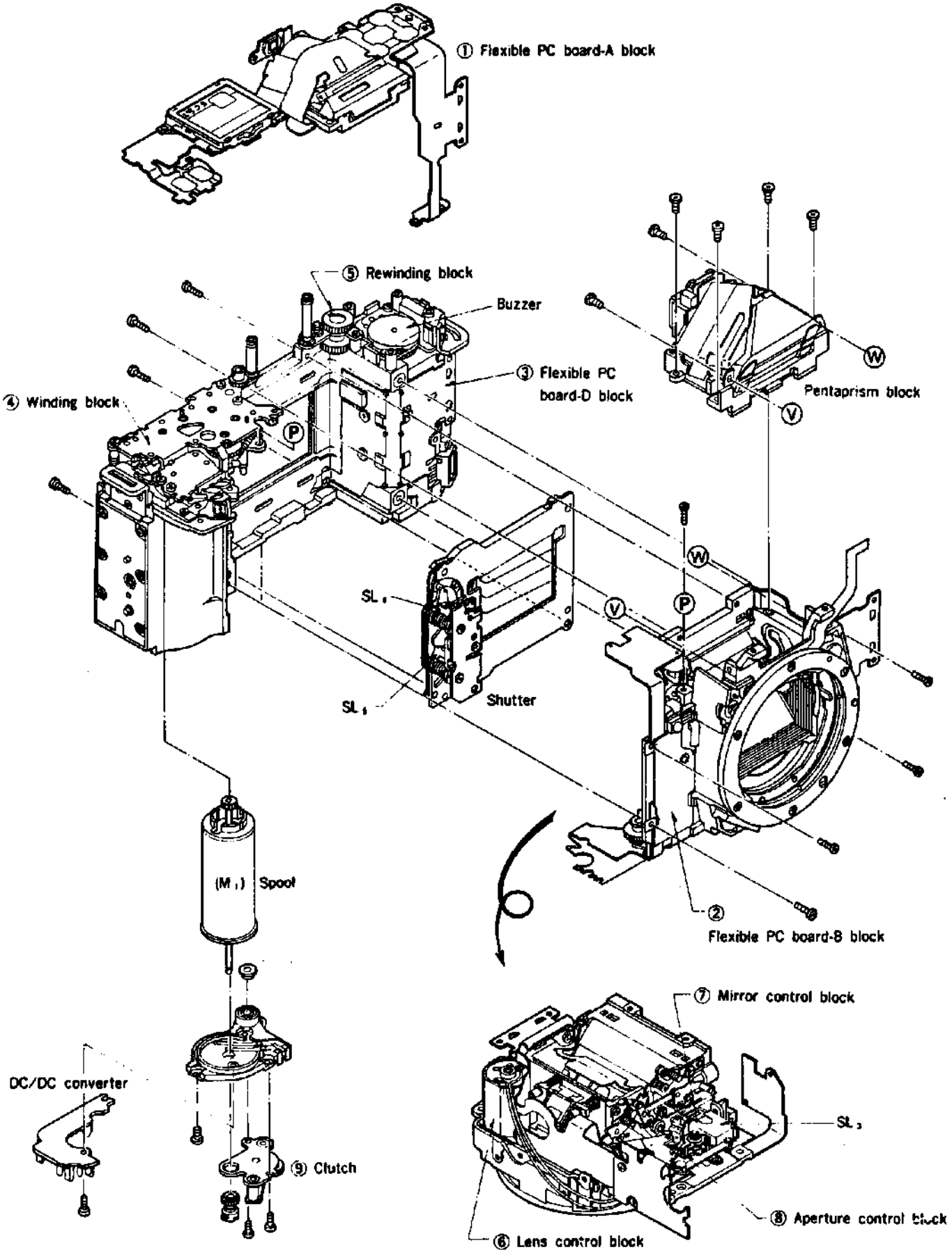
1. Electronic control system



2. Mechanical block description

(1) Block diagram



(2) Block description

① **Flexible PC board-A block**

Composed of $IC_{1, 2, 3}$, and $_4$. Controls metering, indication, exposure and then calculates the data, following program. Also controls timing of each IC operation.

② **Flexible PC board-B block**

- Composed of $IC_{6, 7, 8}$ and $_9$. Detects in-focus position and calculates defocus amount to operate AF.
- Supplies power to M_1 (camera drive motor), M_2 (AF drive motor).

③ **Flexible PC board-D block**

- Composed of IC_5. Decodes film speed on DX-coded film.
- Has contacts to PROGRAM BACK, CONTROL GRIP, REMOTE CORD.

④ **Winding block (interlocked with M_1 forward rotation)**

Composed of clutch interlocking with M_1 rotation, clutch interlocking with rewinding gears, and winding/rewinding gears. Transports and takes up film, charges shutter.

⑤ **Rewinding block (interlocked with M_1 forward rotation)**

Composed of rewinding fork, rewinding gears.
Rewinds film, being interlocked with M_1 rotation.

⑥ **Lens control block**

Composed of M_2, AF coupler, AF encoder, AF drive gears.
AF encoder monitors M_2 rotation (interlocked with lens shifting amount) and shifts lens interlocking with AF coupler.

⑦ **Mirror control block (interlocked with M_1 reverse rotation)**

Composed of mirror-up lever mainly.
Controls mirror (turns up/down).

⑧ **Aperture control block (interlocked with M_1 reverse rotation)**

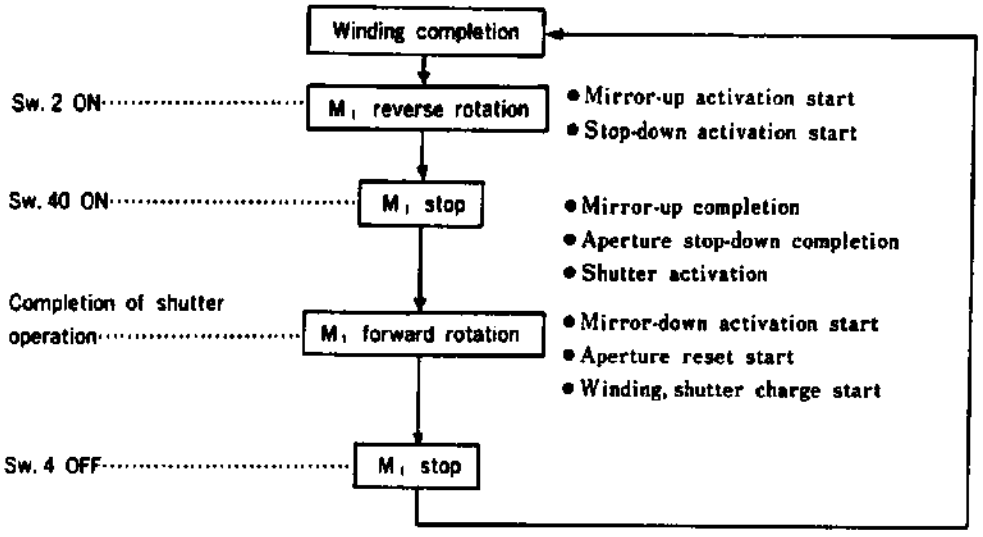
Composed of SL_3, aperture encoder, aperture-ring gears.
During stop-down operation, aperture encoder monitors rotation amount of aperture ring, and completes stop-down with SL_3 separation.

⑨ **Clutch**

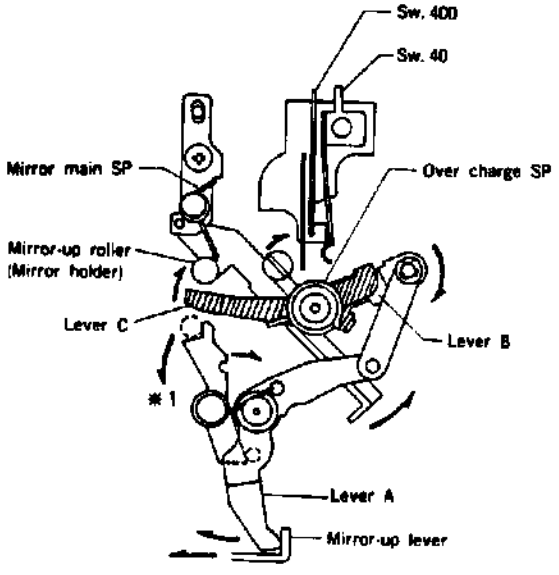
Transmits M_1 rotation to mirror box (mirror control block, aperture control block), during M_1 reverse rotation.

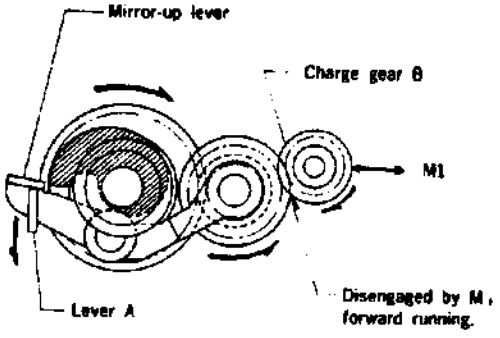
3. Mechanical description (Description of M_1 running direction in Service Manual: while shutter releasing...reverse, winding...forward)

(1) Operation cycle



(2) Mirror-up/-down mechanism





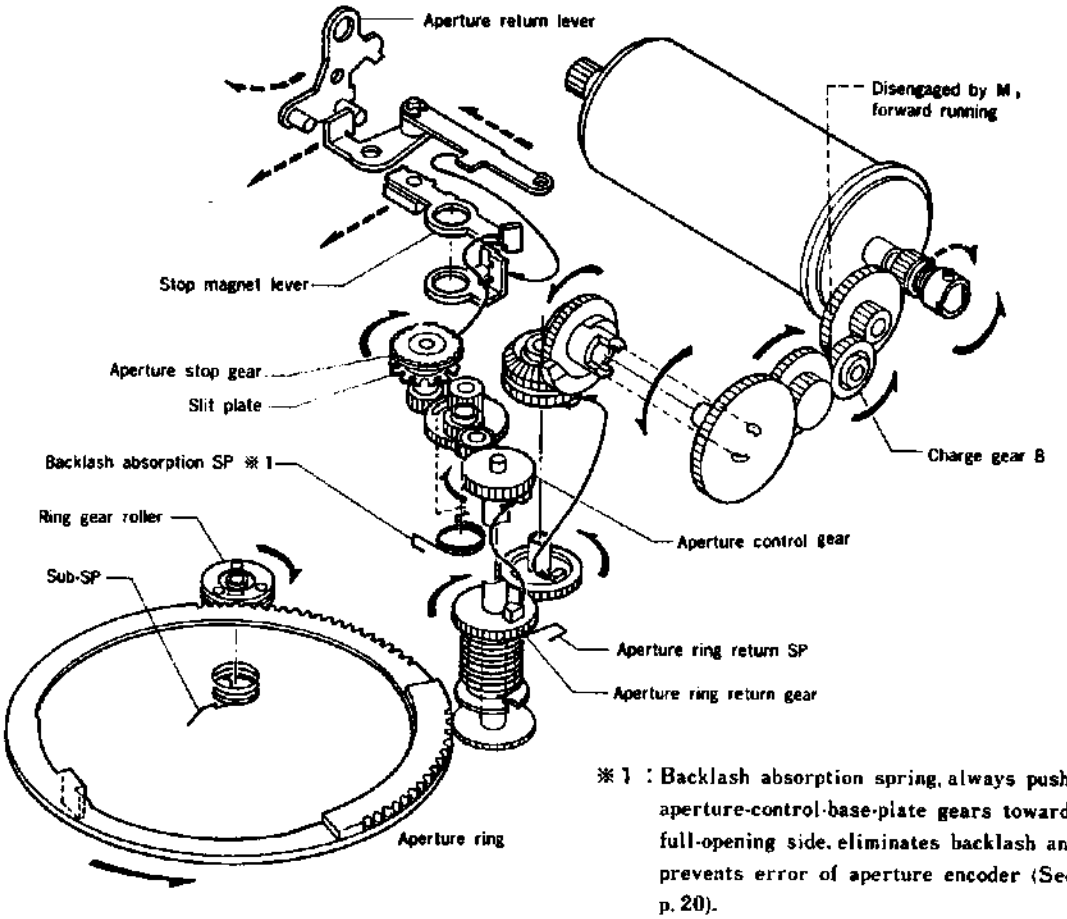
■Operation when mirror-up

- M_1 starts running (reverse) ……Charge gear B engages with mirror-box gears.
- Mirror-up activation starts ……Being pushed by mirror-up lever, levers A, B, C shift to push up mirror-up roller.
- Sw. 400 ON ……Sw. 4 OFF
- Shutter-lock release ※1 ……By $SL_{4,5}$, shutter blades are held.
- Sw. 40 ON ……Mirror-up completion signal
- M_1 stop ……By Sw. 40 ON
- Mirror-up completion

■Operation when mirror-down

- M_1 starts running (forward) ……Charge gear B and mirror-box gear are disengaged.
- Mirror-down activation starts ……By mirror main spring
- Sw. 40 OFF
- Sw. 400 OFF ……Sw. 4 ON before Sw. 400 OFF
- Mirror-down completion

(3) Aperture control mechanism



※1 : Backlash absorption spring, always pushing aperture-control-base-plate gears towards full-opening side, eliminates backlash and prevents error of aperture encoder (See p. 20).

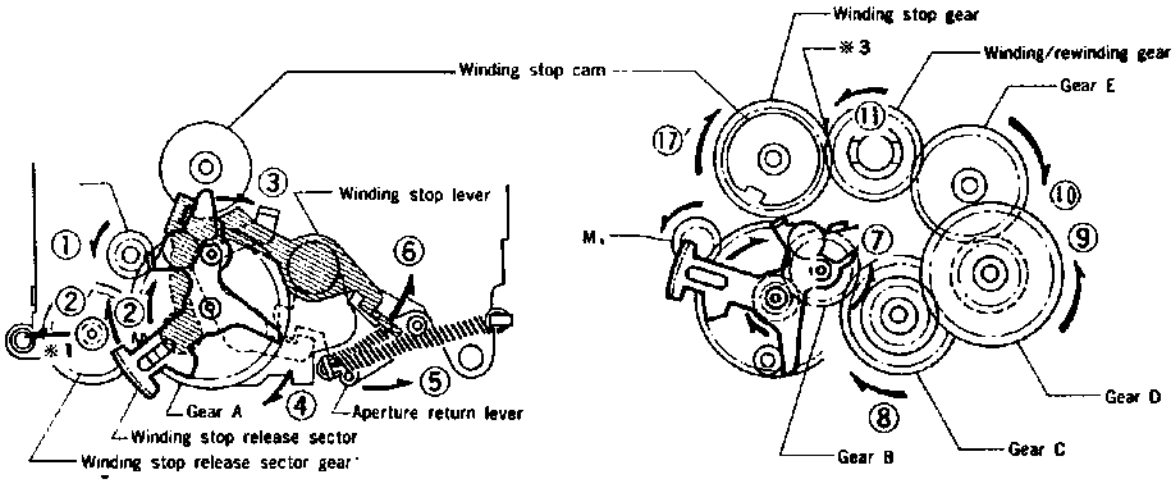
■Operation when stop-down

- **M_1 starts running (reverse)** ..... With charge gear B engaging with mirror-box gears, shutter-release activation starts.
  For full-opening setting, SL_3 separates, and aperture-stop-gear locks by stop-magnet-lever. (no activation of aperture ring)
- **Stop-down activation starts** ..... Rotating, aperture-ring-return-gear charges aperture-ring-return-spring → Ring-gear-roller rotates by sub-spring → Aperture ring rotates in the direction of stop-down + Aperture-control-gear rotates.
- **Slit plate rotates, generating aperture pulse**
- **Aperture pulse count** ..... Pulse is counted, corresponding to amount of setting aperture from full-opening. 1 stop = 8 pulse
- **Aperture-ring stop** ..... SL_3 separates → Stop-magnet-lever stops aperture-stop-gear → Aperture ring stops. (Aperture-ring-return-gear continues rotation.)
- **Completion of stop-down**

■Operation when resetting to full-opening

- **M_1 starts running (forward)** ..... Charge gear B is disengaged → Mirror-box gears idle.
- **SL_3 charge** ..... Almost the same time that mirror box gears become idle, SL_3 is charged by aperture-return-lever on winding-base-plate side, and aperture-stop-gear is disengaged.
- **Aperture ring return** ..... Forced by aperture-ring-return-spring, aperture-ring-return-gear rotates, pushing aperture-control-gear.
  (Aperture ring is returned to stop position)
- **Full-opening**

(4) Winding, rewinding mechanism



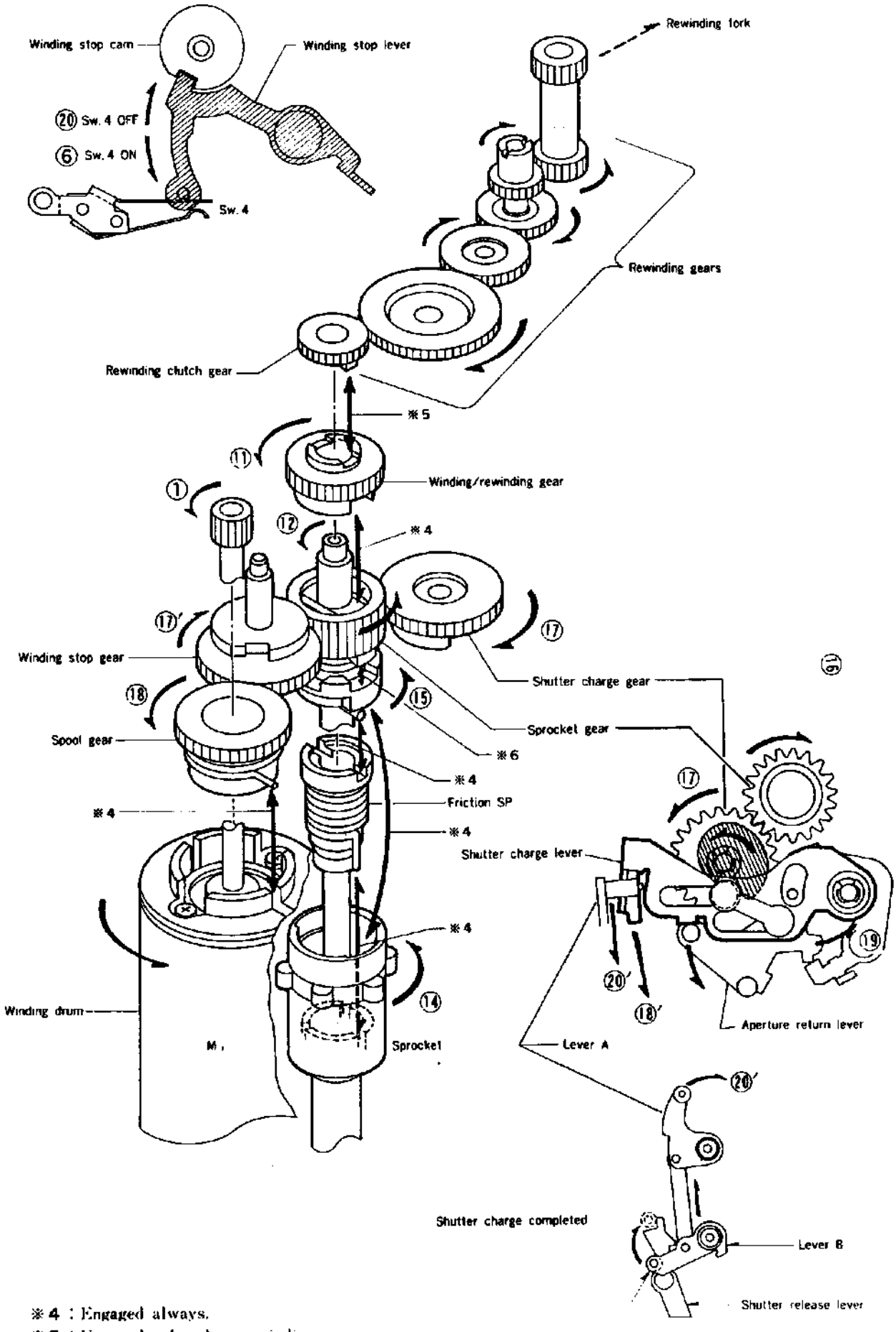
■Operation when winding

- M_1 starts running (forward) ····· Mirror-down activation starts
- Winding stop-release-sector shifts to disengage aperture-return-lever ····· • SL_1 charge ⑤ • Winding-stop-lever is released ⑥ • Sw. 4 ON ⑥
- Reduction gears B & C are engaged to transmit rotation ⑦, ⑧ ····· Gears D, E, and winding/rewinding gear rotate ⑨, ⑩, ⑪
- Sprocket axis rotation ····· Film-end-friction rotates ⑬
  - Sprocket rotation ⑭ ····· Film transport
- Sprocket gear rotation ⑯
  - Shutter-charge-gear rotation ⑰ ····· Shutter and aperture-return-lever are charged by cam rotation ⑳′, ⑲′
  - Winding-stop-gear rotation ⑰′ ····· Winding-stop-cam rotates (Aperture-return-lever is charged completely.....ready for winding-stop-lever engagement.)
  - Spool gear rotation ⑱ ····· Film is wound
- Sw. 4 OFF ⑳ ····· By engagement of winding-stop-cam with winding-stop-lever, Sw. 4 is turned OFF (= winding completion).
- M_1 stop

※1 : When tooth tip of winding-stop-release-sector gear and that of drive gear about to touch, the drive gear will shift to engage smoothly.

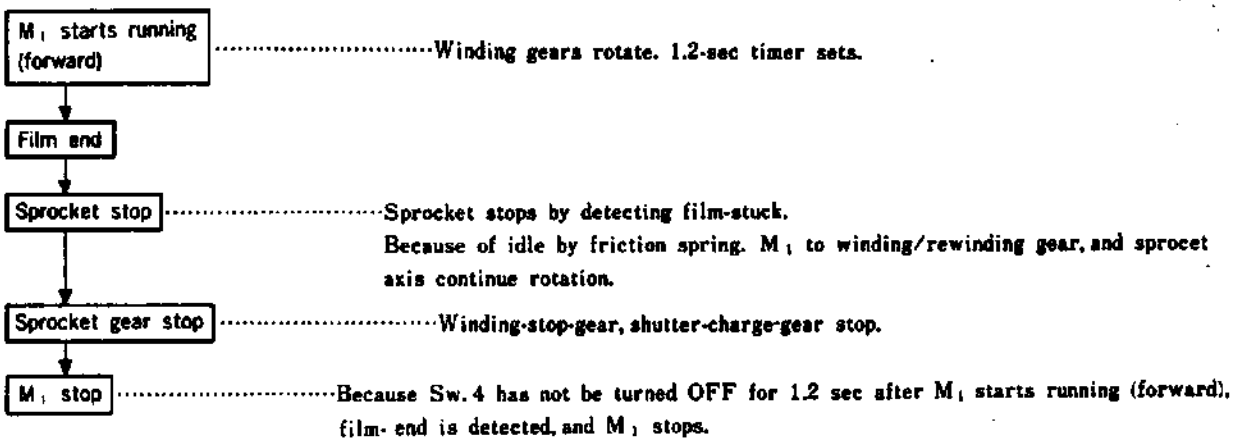
※2 : Drive gear, engaging with winding-stop-release-sector gear, shifts winding-stop-release-sector forcedly to release aperture-return-lever.

※3 : Winding-stop-gear rotates, interlocked with sprocket-gear.

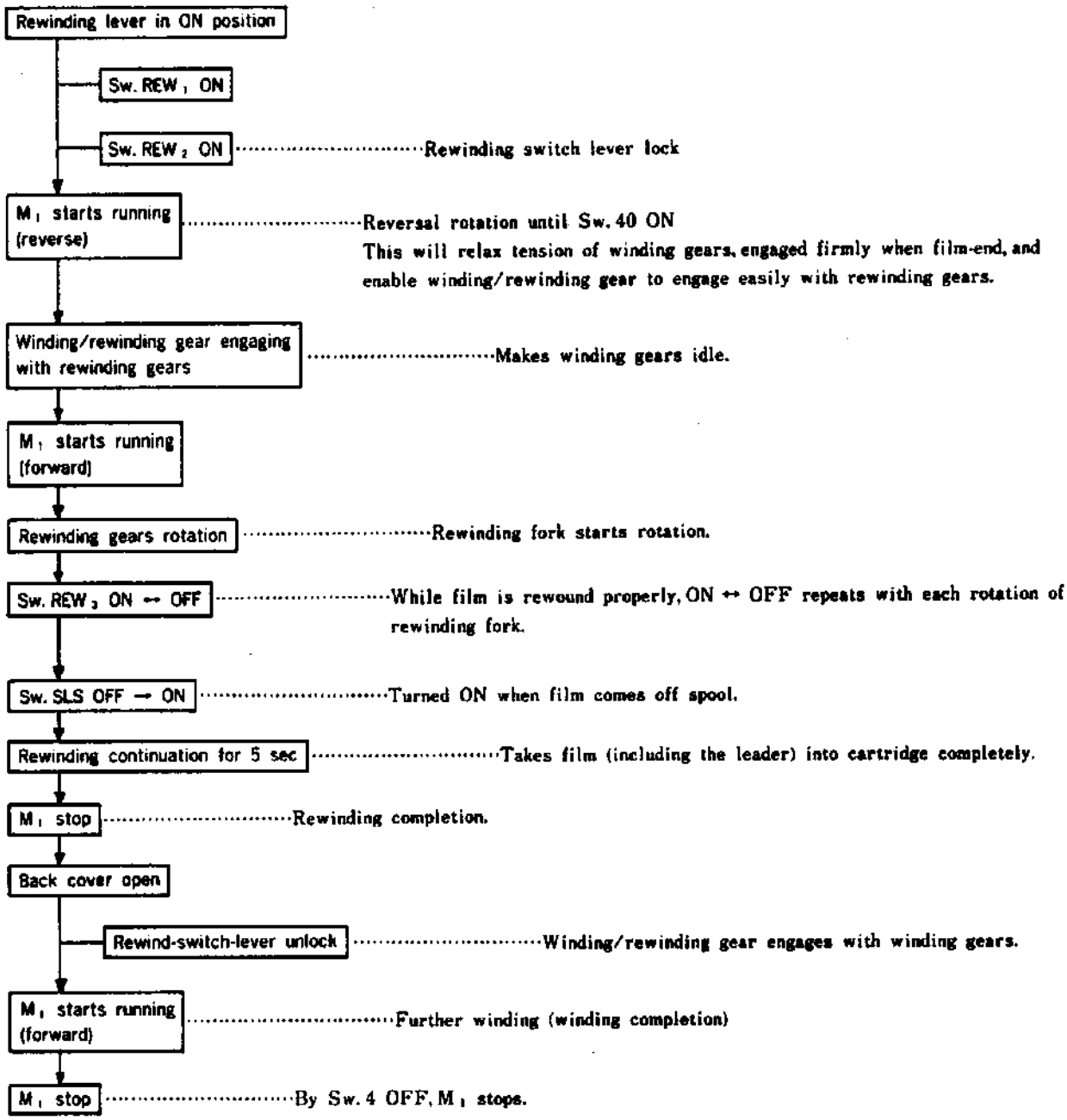


※4 : Engaged always.
※5 : Engaged only when rewinding.
※6 : Disengaged only when rewinding.

■Operation when film end


M1 starts running (forward)
Winding gears rotate. 1.2-sec timer sets.
Film end
Sprocket stop
Sprocket stops by detecting film-stuck.
Because of idle by friction spring. M1 to winding/rewinding gear, and sprocet axis continue rotation.
Sprocket gear stop
Winding-stop-gear, shutter-charge-gear stop.
M1 stop
Because Sw. 4 has not be turned OFF for 1.2 sec after M1 starts running (forward), film- end is detected, and M1 stops.

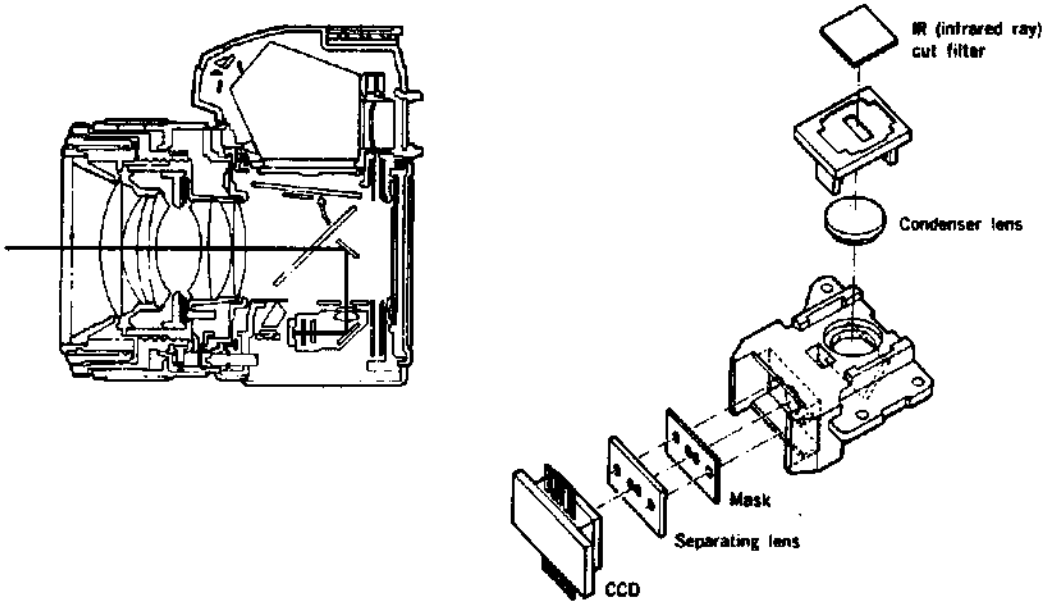
■Operation when rewinding


Rewinding lever in ON position
Sw. REW1 ON
Sw. REW2 ON
Rewinding switch lever lock
M1 starts running (reverse)
Reversal rotation until Sw. 40 ON
This will relax tension of winding gears, engaged firmly when film-end, and enable winding/rewinding gear to engage easily with rewinding gears.
Winding/rewinding gear engaging with rewinding gears
Makes winding gears idle.
M1 starts running (forward)
Rewinding gears rotation
Rewinding fork starts rotation.
Sw. REW3 ON ↔ OFF
While film is rewound properly, ON ↔ OFF repeats with each rotation of rewinding fork.
Sw. SLS OFF → ON
Turned ON when film comes off spool.
Rewinding continuation for 5 sec
Takes film (including the leader) into cartridge completely.
M1 stop
Rewinding completion.
Back cover open
Rewind-switch-lever unlock
Winding/rewinding gear engages with winding gears.
M1 starts running (forward)
Further winding (winding completion)
M1 stop
By Sw. 4 OFF, M1 stops.

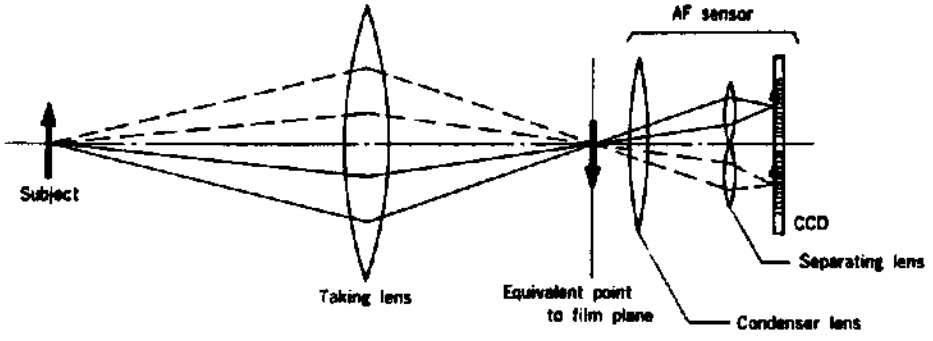
4. Principle of auto focusing (explanatory diagram)

(1) Light path

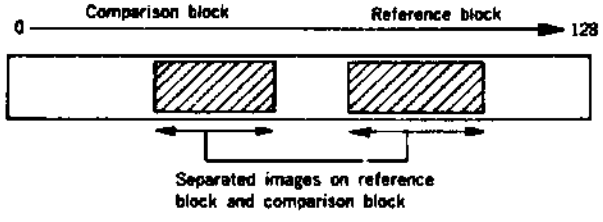
The light from taking lens passes through main mirror (half mirror), reflects on sub mirror, and strikes on AF sensor.
AF sensor is composed with optical elements (IR cut filter, condenser lens, separating lens etc.) and CCD image sensor.



(2) AF sensor

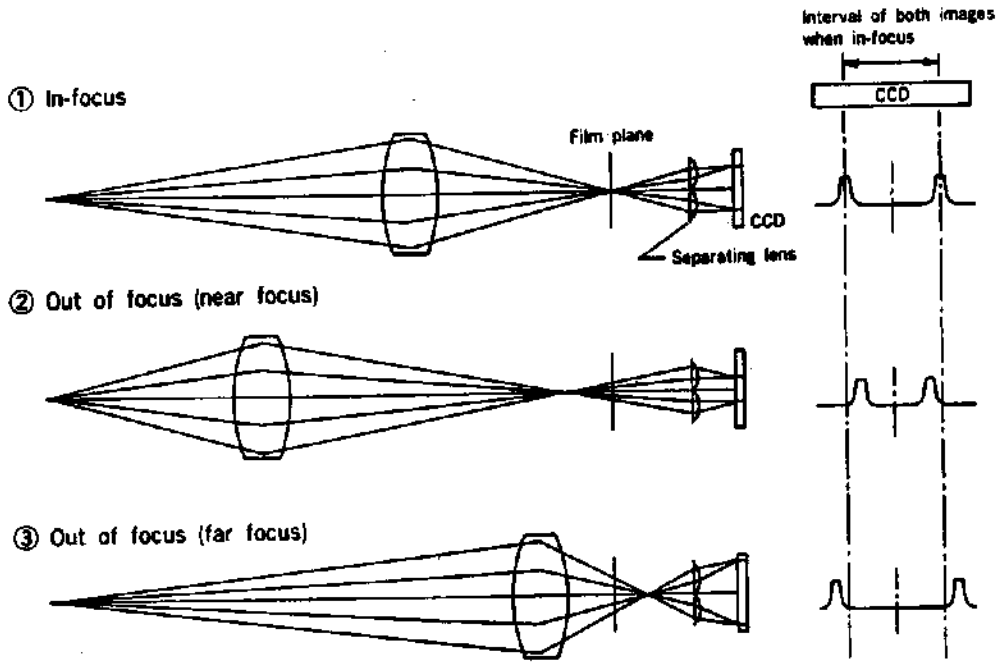


- Separating lens is composed with 2 extremely small lenses (lined side by side). The image, formed by taking lens, is separated into two images (in right and left) and formed on CCD image sensor by separating lens.
- CCD image sensor sequentially outputs electric charge of each picture element, as phase difference signal of 2 images, to IC_6 through IC_8.



Phase differance detection system detects focusing state comparing positions of 2 images.
Comparison block is composed with more picture elements than reference block so that comparison block can detect focus amount and defocus direction.

(3) Phase difference detection system



① In-focus

After light from taking lens is focused on specified position which corresponds to actual film plane. Light is separated into two images and formed on CCD image sensor by separating-lens.

② Out of focus (near focus)

In case that light is focused on front side of specified position, space in between 2 images becomes narrower than that of in-focus.

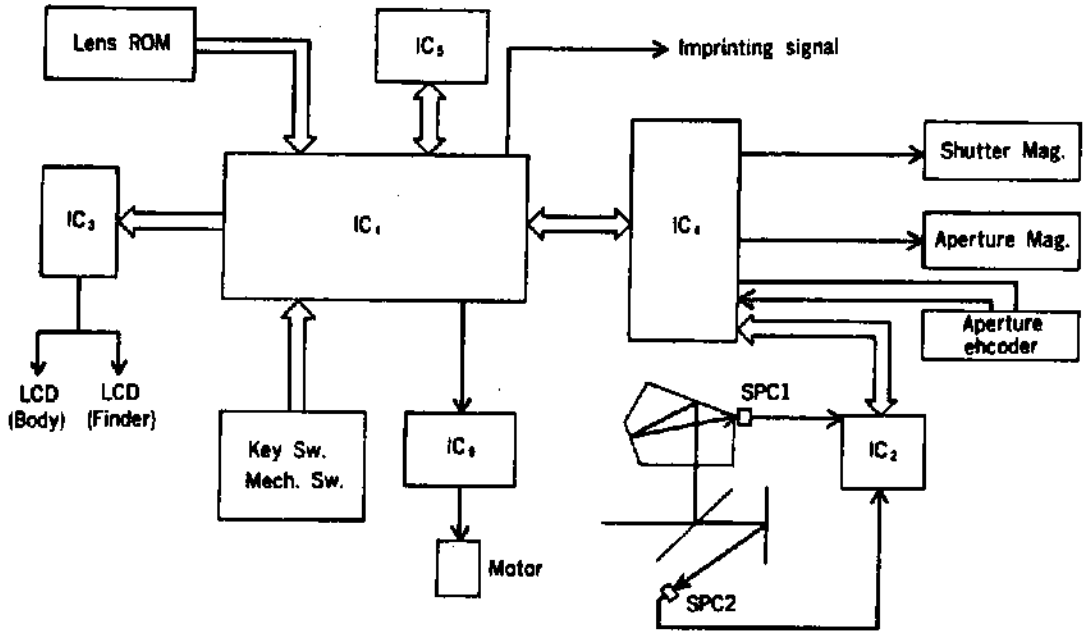
③ Out of focus (far focus)

In case that light is focused on rear side of specified position, space in between 2 images becomes wider than that of in-focus.

Comparison block is composed with more picture elements than that of reference block. AF circuit detects phase difference while shifting image on comparison block one by one, comparing image on reference block.

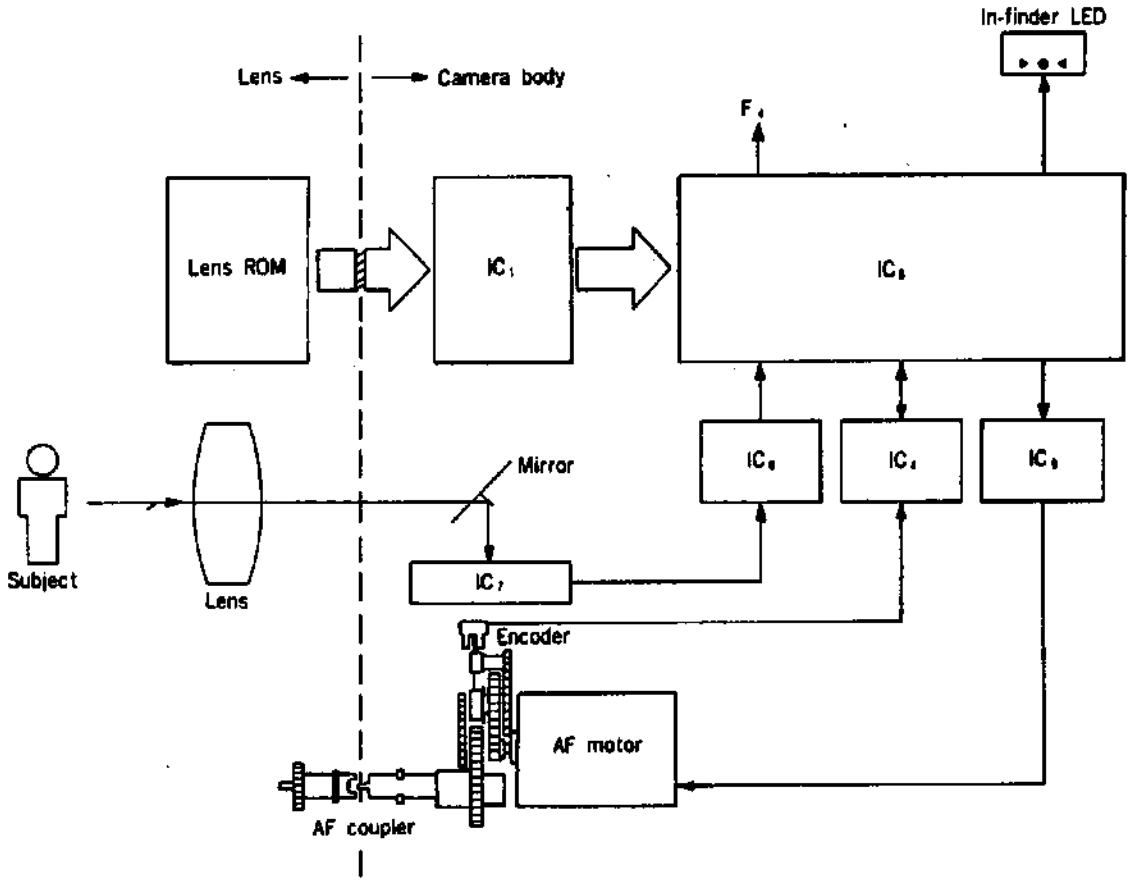
Since space in between 2 images at in-focus is specified, in-focus position and defocus amount can be calculated by image data on refernce block and comparison block.

5. Summary of body circuit



Metering Sw. ON → IC_1 starts to activate.
Ambient light metering is activated by SPC1, Bv data (A/D converted by IC_2) inputs to IC_1 through IC_4.
IC_4 calculates data corresponding to setting conditions (ISO, exposure mode, lens information, etc.), and displays calculations in LCDs through IC_3.
Release Sw. ON → Attraction of shutter magnet simultaneous with output of imprinting signal → Activation of winding motor reverse running through IC_6.
Counts pulse generated by rotation of aperture slit plate corresponding to amount of setting aperture, interlocking with activation of winding motor, to control aperture.
(With full-open setting, aperture magnet separates simultaneous with activation of winding motor.)
Completion of pulse-count → Separation of aperture magnet
With mirror-up switch ON, completion of mirror-up is detected → Winding motor running stops simultaneous with shutter magnet controlling (corresponding to shutter speed setting)
Winding motor starts to reactivate (forward running) after completion of shutter traveling.
Winding-completion switch OFF → Detection of winding completion → Winding motor running stops → Frame counter counts up 1 (remains "0" with no film loaded)
Winding-completion switch remains ON at condition of film-stuck → Detection of film end → Indication of film end.

6. Summary of AF circuit



Auto focusing block is composed with three ICs ($IC_{6, 7, 8}$).

IC_8 detects signal from IC_7 through IC_3 corresponding to conditions of subject, and calculates in-focus direction and defocus amount simultaneous with detecting of lens-ROM-information through IC_1.

AF motor running direction, running amount, running speed are calculated (selected) according to lens-ROM-information.

Running direction : determined by in-focus direction

Running amount : determined by pulse corresponding to defocus amount

Running speed* : selected corresponding to defocus amount

※Four speeds : No regulation, High speed, Low speed, step

IC_6 controls AF motor running, through IC_9, monitors by encoder (photo interruptor).

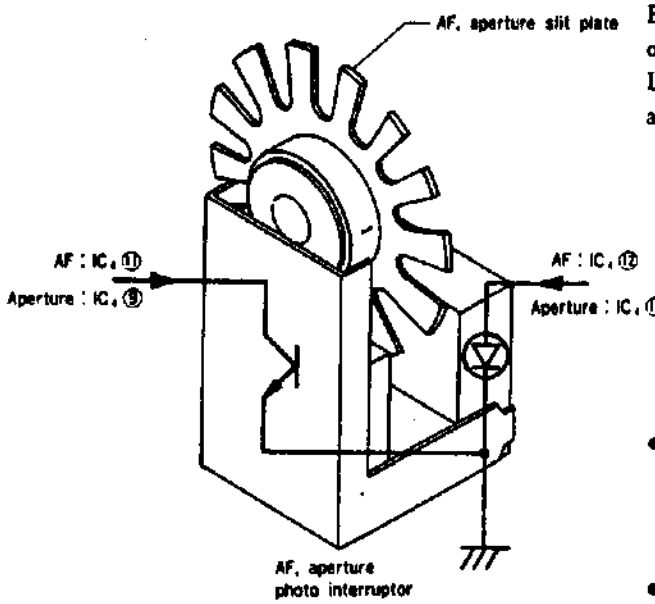
AF motor running stops after required pulse, corresponding to IC_6 calculation, is detected.

AF circuit discriminates whether in-focus or not.

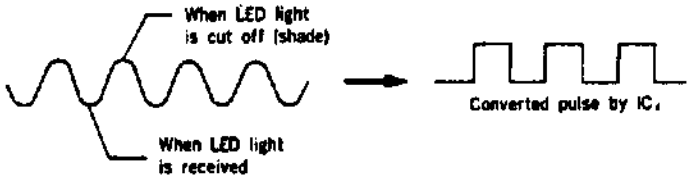
● Operation with exclusive flash mounted

In case that defocus amount is not detected in low light condition, IC_6 outputs H signal to F_4 terminal (flash) → Flash projects AF-assist light → Camera detects light reflected from subject and detects defocus amount.

7. Function of encoder



By slit plate rotation, light from LED to photo transistor is cut off repeatedly. Photo transistor outputs light/shade signal of LED. Light, received by photo transistor, is converted into pulse and input to IC_1, IC_5 by IC_4.



AF : IC_5 ⑪, Aperture : IC_4 ⑨

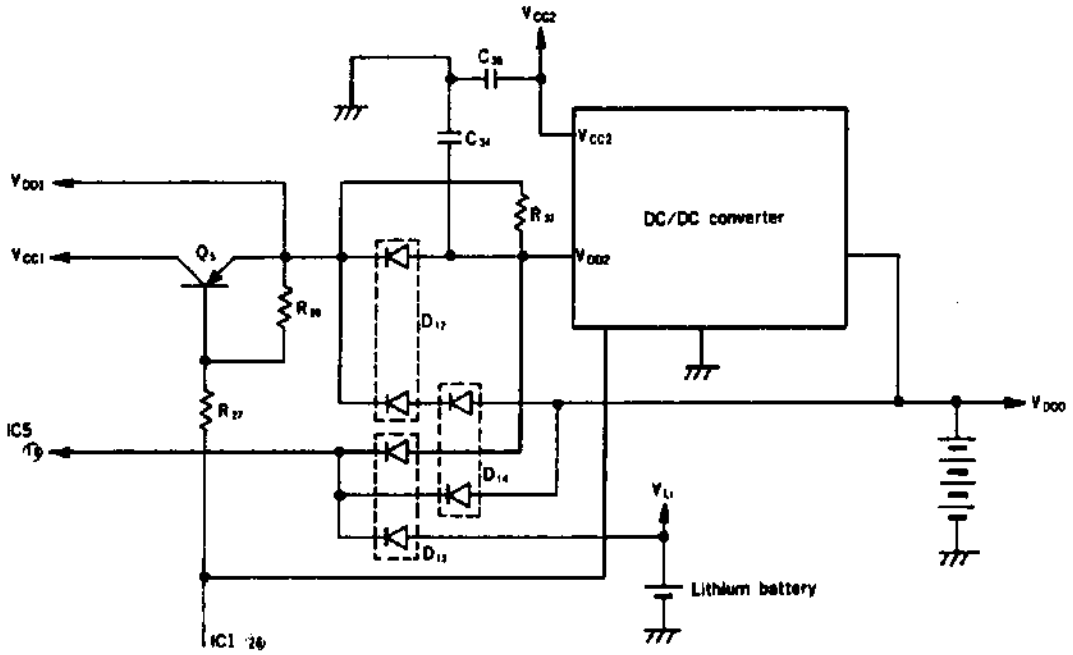
- **AF**

  Counts pulse generated by rotation of AF slit plate interlocking with M_2 rotation, monitors AF coupler rotation (lens shifting monitor)

- **Aperture**

  Counts pulse generated by rotation of aperture slit plate interlocking with stop-down operation, monitors shifting amount of aperture ring.

8. Power source circuit



With battery holder attached, battery power is supplied to each IC as V_{DD0} and V_{DD1}.
By turning metering Sw. ON → IC_1 ㉕ becomes at L → Q_3 ON → DC/DC converter is activated, stabilized power is supplied (as V_{CC1} and V_{DD1}) Output of V_{CC2}.

Function of lithium battery

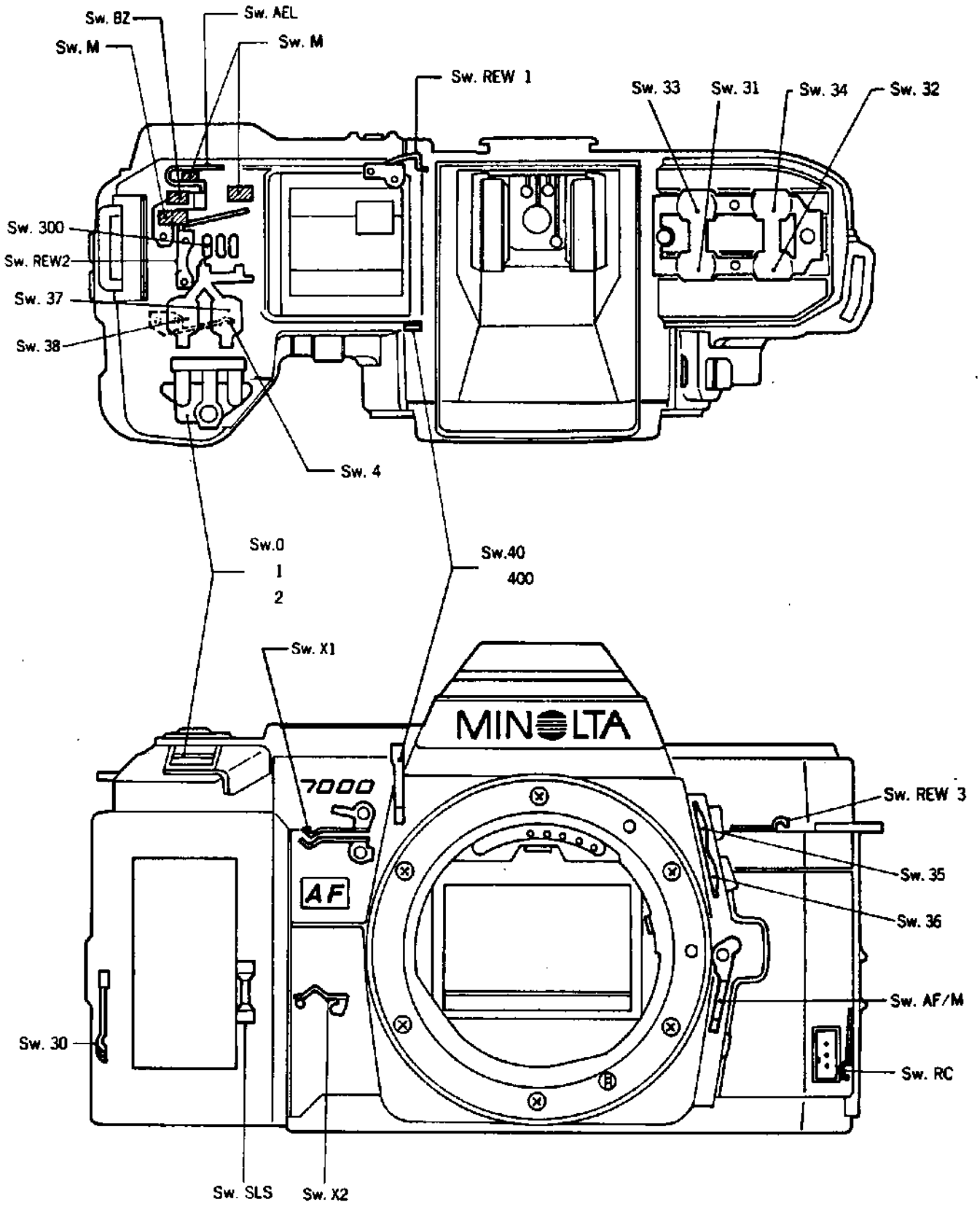
When battery in grip is exhausted or removed for replacement, lithium battery supplies power, through D_{13}, to IC_5 (memorizing ISO setting and frame number with indicators OFF)

When lithium battery exhaustion

IC_4 ① checks V_{Li} voltage, and this signal is input through I/O Bus to IC_1. If the voltage is less than 2.3V, attaching battery grip or turning program reset Sw. ON will make LCD "ISO" signal and ISO setting blink for 10 sec.

8. Function of switches

(1) Position of switches



(2) Function of switches

Mark	Name	Condition of operation
Sw. 0	Touch switch	ON by touching operation button
Sw. 1	Metering switch	Remains ON for 10 sec before shutter release ON by depressing operating button to click stop
Sw. 2	Release switch	ON by depressing operating button all the way
Sw. 4	Winding-completion switch	OFF→ON with winding start ON→OFF with winding completion
Sw. 40	Mirror-up switch	ON with mirror-up completion OFF with mirror-down
Sw. 400	Sub-switch of Sw. 4	
Sw. M	Main switch	By sliding main switch Sw. M ON, Sw. BZ ON
Sw. Bz	Buzzer switch	By sliding main switch Sw. M●))) , Sw. BZ OFF
Sw. RC	Back-cover switch	OFF by closing back-cover
Sw. REW 1	Rewinding switch 1	ON by sliding rewind switch lever
Sw. REW 2	Rewinding switch 2	ON by locking rewind switch lever
Sw. REW 3	Rewinding switch 3	ON→OFF→ON with one rotation of rewinding fork
Sw. SLS	Film detecting switch	OFF with film wound by spool
Sw. AEL	AE lock switch	ON by derpessing AE lock button
Sw. AF/M	Focus mode switch	By sliding focus mode switch ON in M mode, OFF in AF mode
Sw. X1	Sync switch 1	OFF→ON with completion of 1st shutter blade traveling OFF with completion of 2nd shutter blade traveling
Sw. X2	Sync switch 2	• ON with shutter charge start • OFF with completion of 2nd shutter blade traveling
Sw. 300	Program reset switch	ON by depressing program reset
Sw. 30	Battery switch	ON→OFF by attaching battery grip
Sw. 31	ISO key switch	• Mode and value are set by depressing shutter speed key (or aperture key) with control key* held down. ※General name for the four keys • Metering and indication circuits are activated also by control key ON. The indication, corresponding to the key in use, will be displayed and continue for 10 sec after the key OFF.
Sw. 32	+/− key switch	
Sw. 33	Drive mode key switch	
Sw. 34	Exposure mode key switch	
Sw. 35	F stop-up key switch	• In P, A, S modes With up key pressed : set shutter speed faster, aperture (lens opening) larger. With down key pressed : sets shutter speed slower, aperture (lens opening) smaller. • When the key is held down, the value changes rapidly. Each time the key is pressed, the value changes by one stop corresponding to pressed control key.
Sw. 36	F stop-down key switch	
Sw. 37	Shutter speed down key switch	
Sw. 38	Shutter speed up key switch	

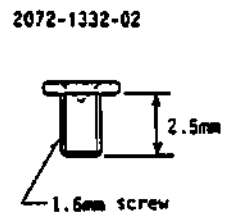
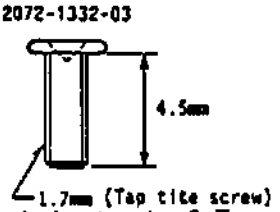
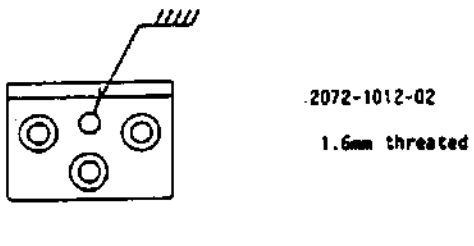
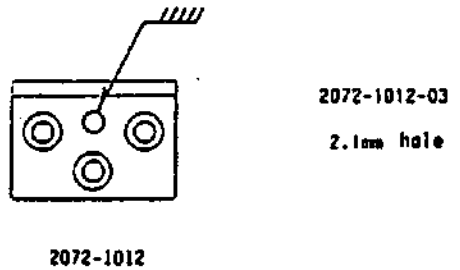
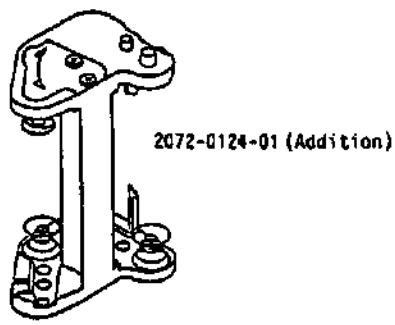
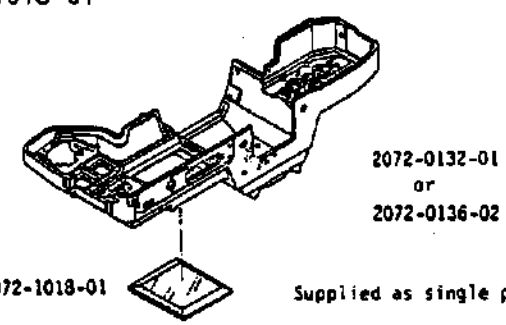
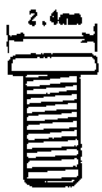
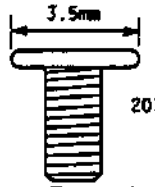
SPECIAL NOTICE

This Parts List contains all the available replacement parts with their respective parts numbers and exploded parts views.

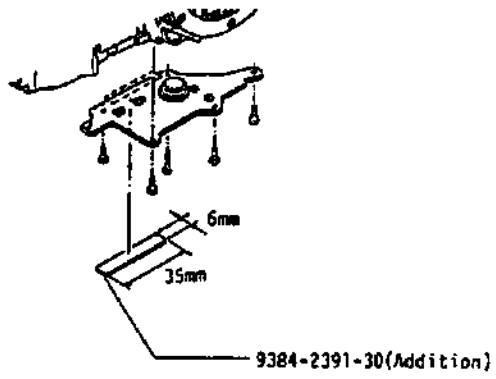
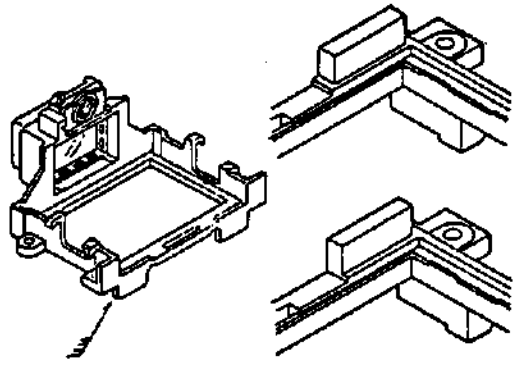
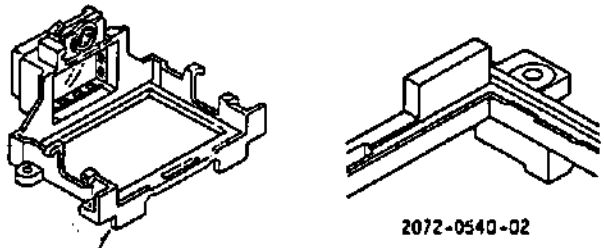
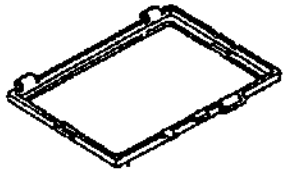
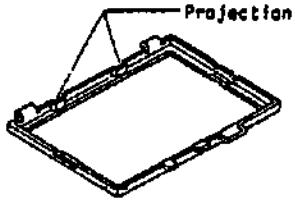
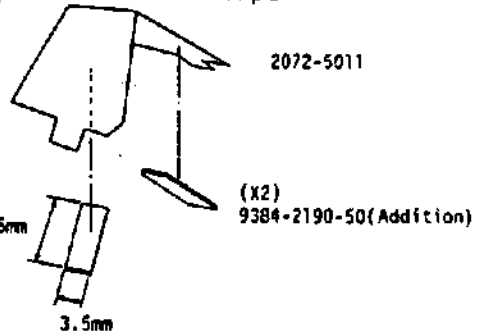
NOTICE - Be sure to refer to the "SUPPLEMENTARY INFORMATION SHEETS" for additional information.

NOTICE - A separate "PARTS MODIFICATION LIST" is supplied. You will note in the main parts list that modified parts are indicated by a note in the margin, i.e; P-1, P-2, etc. This indicates on which page the modified part can be located.

PARTS MODIFICATION LIST

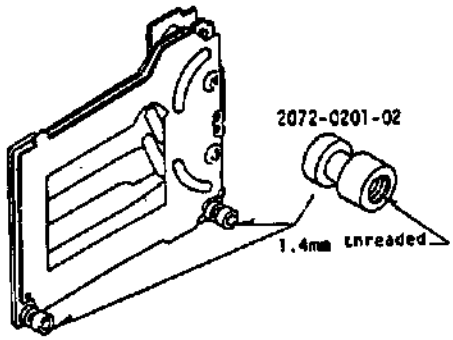
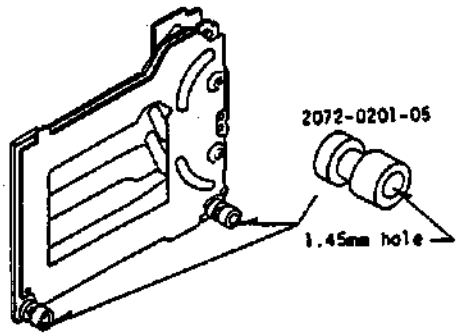
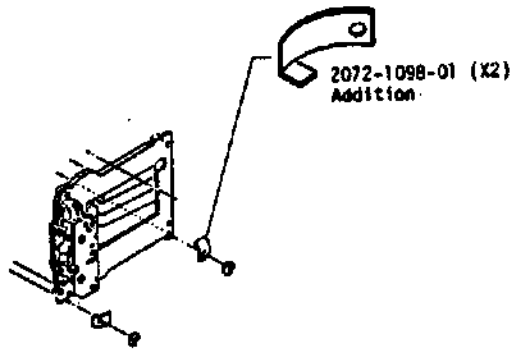
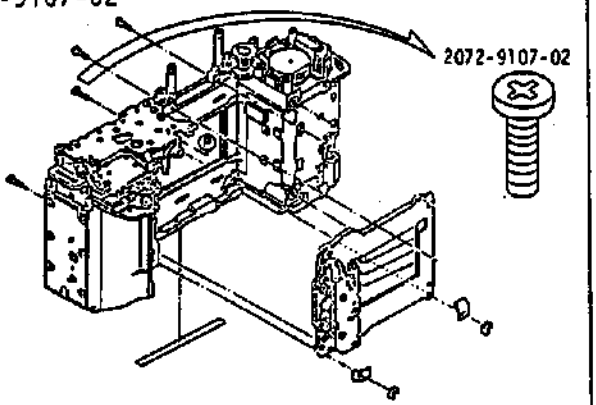
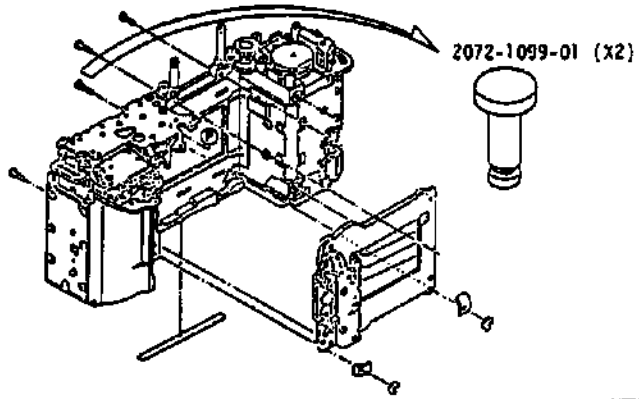
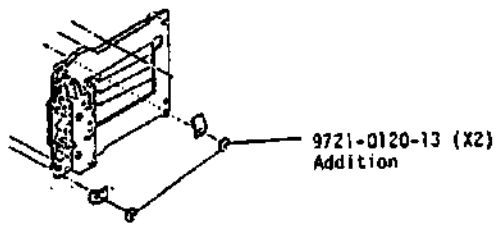
TYPE A	TYPE B
2072-1332-02  Do not use Type B instead of Type A.	2072-1332-03  Do not use Type A instead of Type B.
2072-1012-02  Do not use Type B instead of Type A.	2072-1012-03  Do not use Type A instead of Type B.
	2072-0124-01 
	2072-1018-01 
9611-1630-01  Do not use Type B instead of Type A.	2072-9116-01  Type B can be used as Type A.

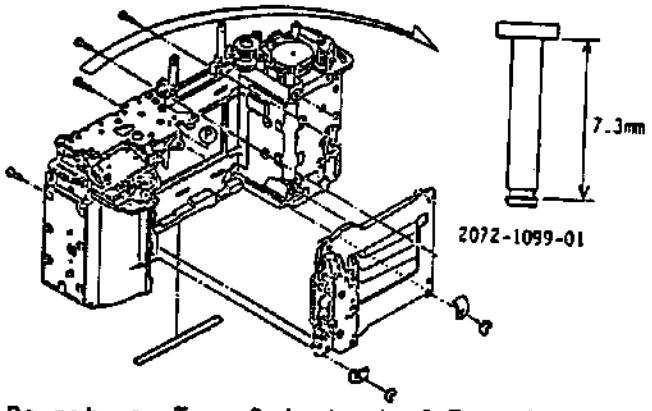
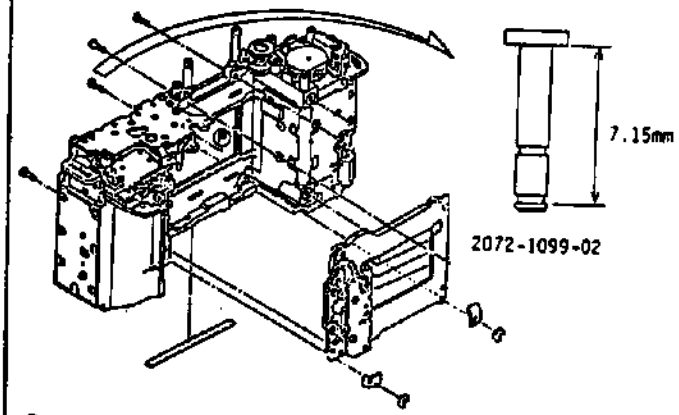
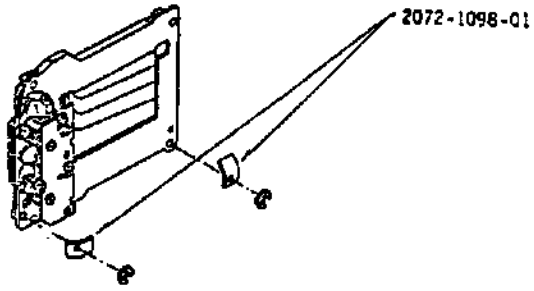
1. For parts of A type which cannot be supplied, (X) is attached to the tail of the part number in the table. If it is necessary to modify the (X)-marked part, replace it with B type.

TYPE A	TYPE B
	9384-2391-30 Acetate tape 
	2072-0540-02  Type B can be used as Type A.
2072-5009-01(X)  Replaceable with the related parts as a set.	2072-5009-02 
	9384-2190-50 Double-faced tape 

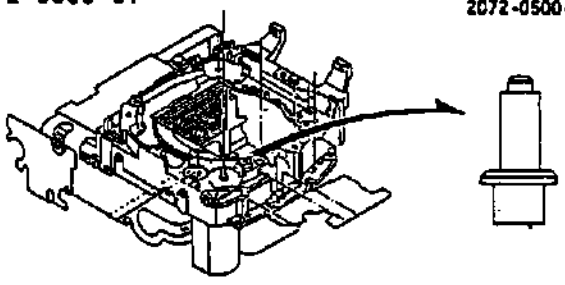
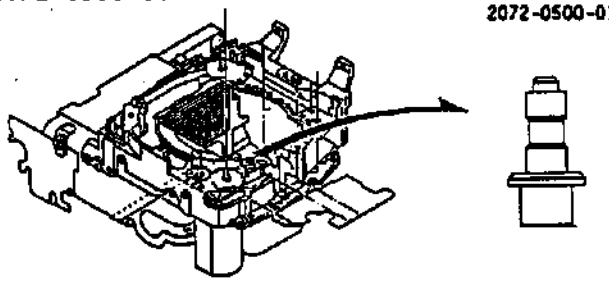
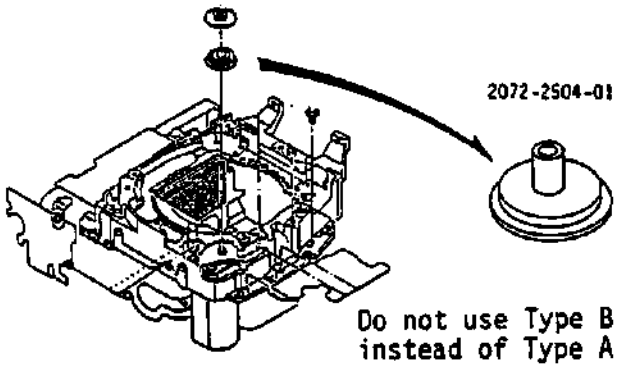
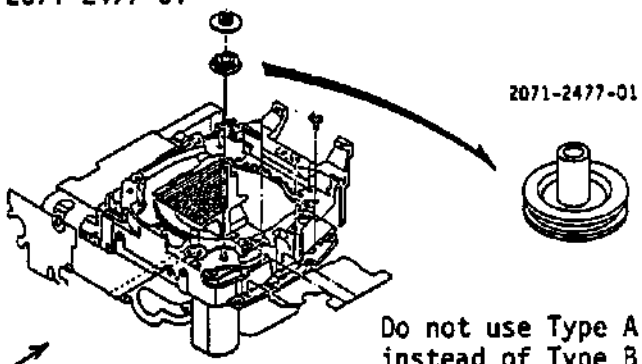
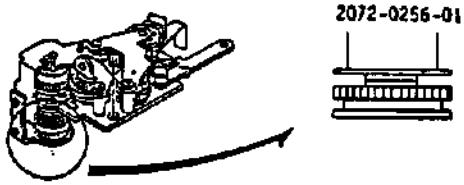
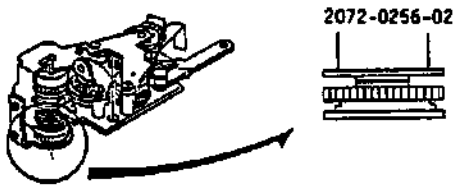
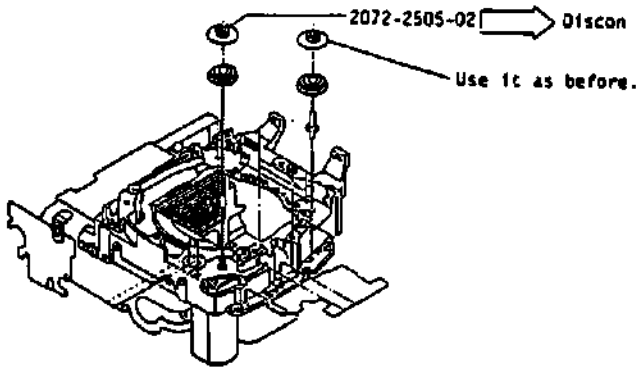
Related with shutter

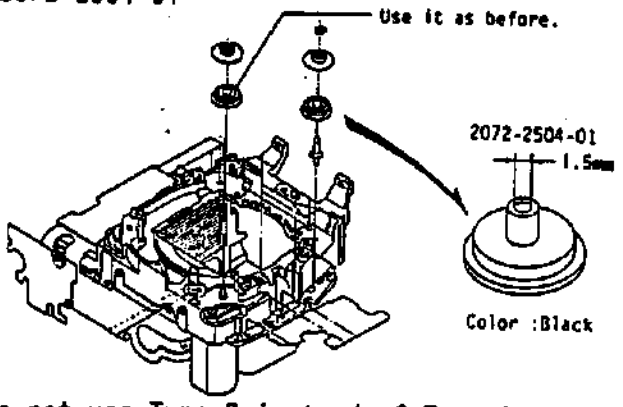
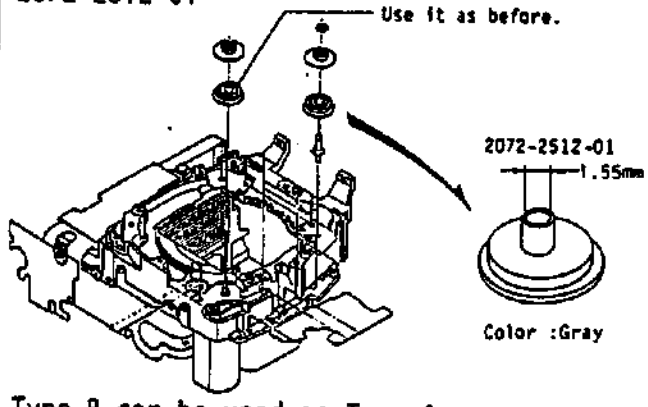
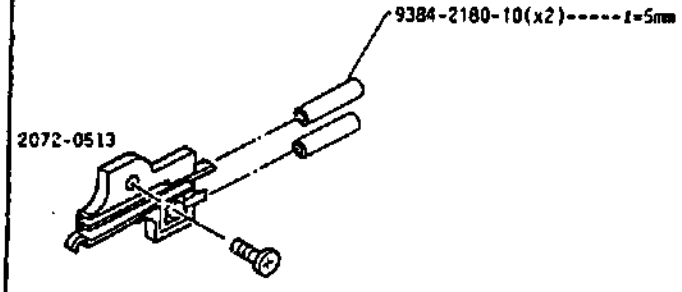
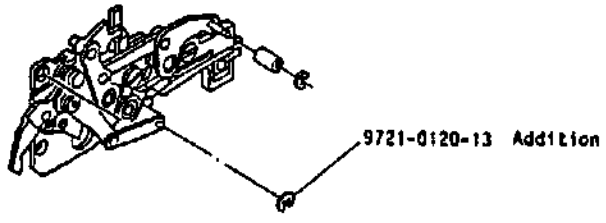
1. For parts of A type which cannot be supplied, (X) is attached to the tail of the part number in the table. If it is necessary to modify the (X)-marked part, replace it with B type.
2. The parts are interchangeable with other types only when they come in a set with the relative parts of each type.
3. When there are relative parts to be modified, the part cannot be individually modified to other type. The relative parts must also be modified to make set part.

TYPE A	TYPE B
2072-0201-02(X) 	2072-0201-05 
	2072-1098-01 Shutter fixing spring 
2072-9107-02 	2072-1099-01 
	9721-0120-13 

TYPE A	TYPE B
2072-1099-01  Do not use Type B instead of Type A.	2072-1099-02  Do not use Type A instead of Type B.
2072-1098-01 	2072-1098-01 is not used for Type B.

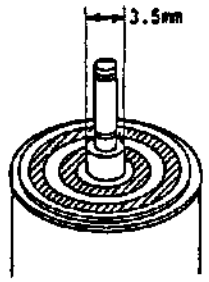
1. For parts of A type which cannot be supplied, (X) is attached to the tail of the part number in the table. If it is necessary to modify the (X)-marked part, replace it with B type.

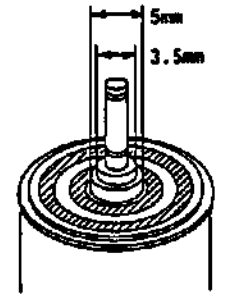
TYPE A	TYPE B
2072-0500-01  ※: APPLY C-oil (0-20) to axis of 2072-0500-01 (A type) when used with 2071-2477-01.	2072-0500-01  Type B can be used as Type A.
2072-2504-01  Do not use Type B instead of Type A.	2071-2477-01  Do not use Type A instead of Type B.
2072-0256-01(X)  Replaceable with the related parts as a set.	2072-0256-02  Do not use Type A instead of Type B.
2072-2505-02  	

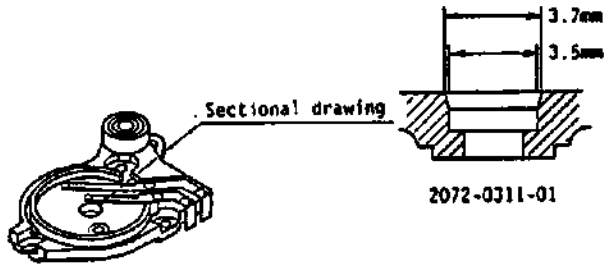
TYPE A	TYPE B
2072-2504-01  Do not use Type B instead of Type A.	2072-2512-01  Type B can be used as Type A.
	9384-2180-10 Irrax tube 
	9721-0120-13 

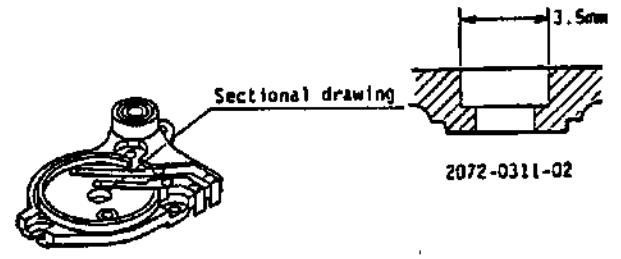
Related with motor set

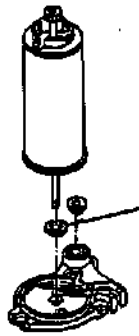
1. For parts of A type which cannot be supplied, (X) is attached to the tail of the part number in the table. If it is necessary to modify the (X)-marked part, replace it with B type.
2. The parts are interchangeable with other types only when they come in a set with the relative parts of each type.
3. When there are relative parts to be modified, the part cannot be individually modified to other type. The relative parts must also be modified to make set part.

<table>
<tr><th>TYPE A</th><th>TYPE B</th></tr>
<tr><td>2072-0424-01(X)
 

2072-0424-01</td><td>2072-0424-02
 

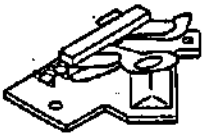
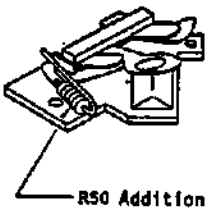
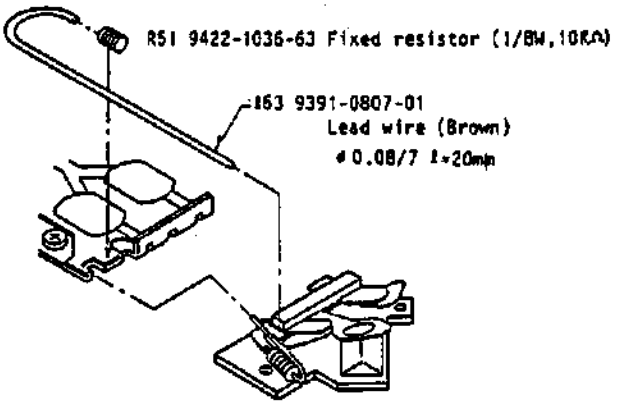
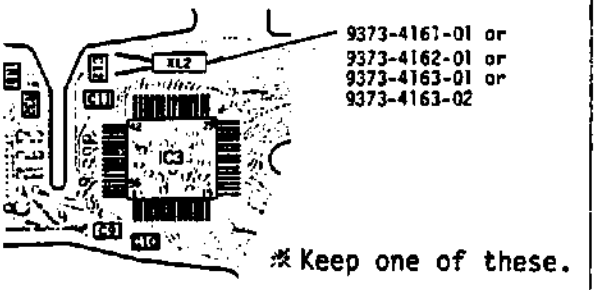
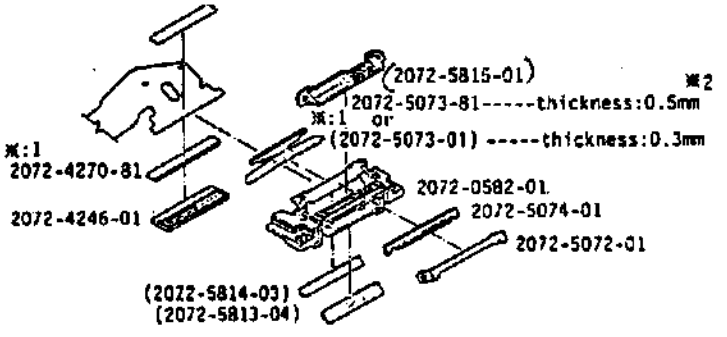
2072-0424-02</td></tr>
<tr><td>2072-0311-01 (X)
 

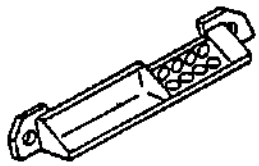
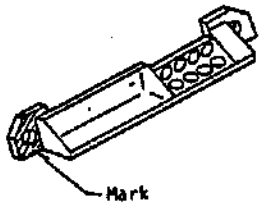
2072-0311-01</td><td>2072-0311-02
 

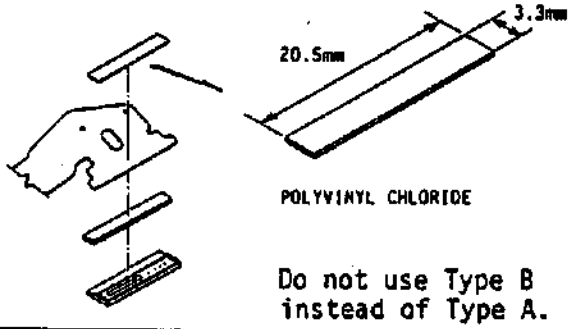
2072-0311-02</td></tr>
<tr><td>2072-9461-81
 

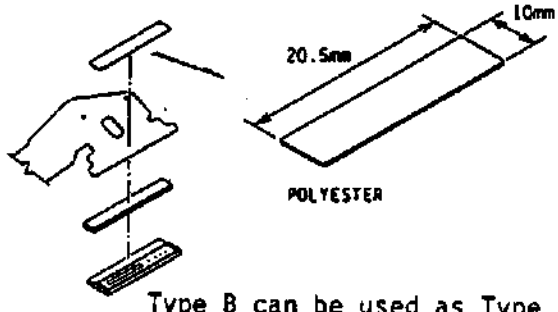
※ White, or black ;
either one will be used.</td><td>2071-9461-81 is not used
for Type B.</td></tr>
</table>

1. For parts of A type which cannot be supplied, (X) is attached to the tail of the part number in the table. If it is necessary to modify the (X)-marked part, replace it with B type.

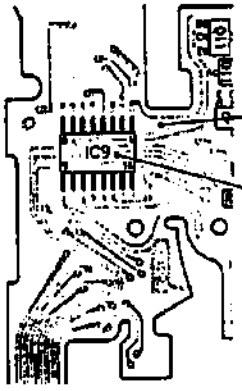
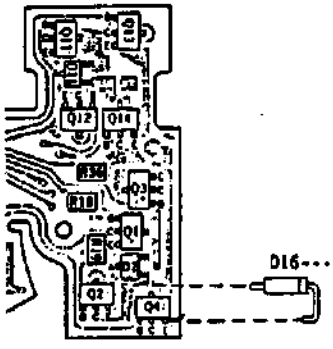
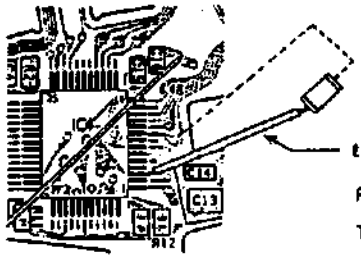
TYPE A	TYPE B
2072-0423-01 	2072-0423-02 9423-1056-61 
	9391-0807-01 9422-1036-63 
	
	 ※:1 2072-4270-81,2072-5073-81 (Addition) ※2 When using 2072-4270-81, use 2072-5073-81 together.

<table>
<tr><th>TYPE A</th><th>TYPE B</th></tr>
<tr><td>2072-5815-01
2072-5815-01
 
Do not use Type B instead of Type A.</td><td>2072-5815-02
2072-5815-02
 

Do not use Type A instead of Type B.</td></tr>
<tr><td><table><tr><th>Symbol</th><th>Previous type</th></tr><tr><td>R13,R15</td><td>9431-3326-62
(1/16W, 3.3KΩ)</td></tr><tr><td>R14</td><td>9431-1226-62
(1/16W, 1.2KΩ)</td></tr></table>
Do not use Type B instead of Type A.</td><td><table><tr><th>Symbol</th><th>New type</th></tr><tr><td>R13,R15</td><td>9431-1826-62
(1/16W, 1.8KΩ)</td></tr><tr><td>R14</td><td>9431-1026-62
(1/16W, 1KΩ)</td></tr></table>
Do not use Type A instead of Type B.</td></tr>
<tr><td>9384-2491-10
9384-2491-10
 

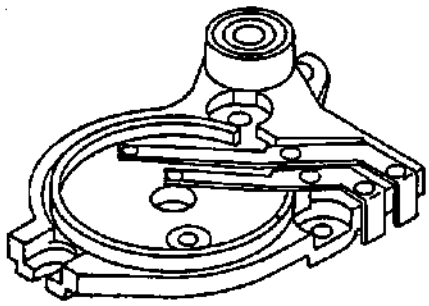
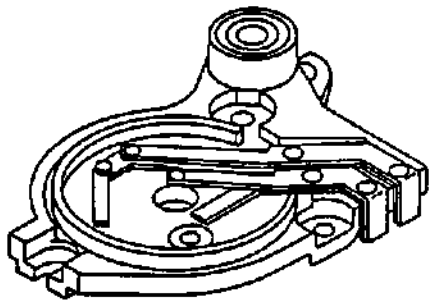
POLYVINYL CHLORIDE
Do not use Type B instead of Type A.</td><td>2072-5078-04
2072-5078-04
 

POLYESTER
Type B can be used as Type A.</td></tr>
</table>

TYPE A	TYPE B
	2072-4309-01  Use as servicing part. (2072-4309-01)
	9361-1631-11 
	9391-0807-02 

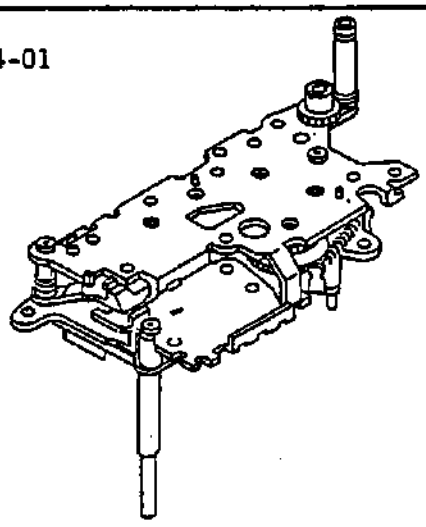
PARTS MODIFICATION LIST
(1986 JAN. - 1986 JUN.)

● Motor contact plate set

TYPE A	TYPE B
2072-0311-02  Do not use type A instead of type B.	2072-0311-03  Type B can be used instead of type A.

● Winding base plate set

2072-0304-01

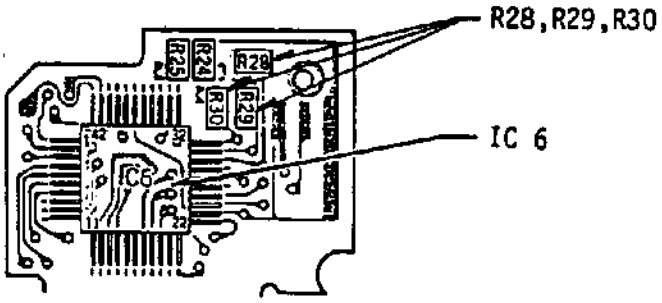


Use as servicing parts

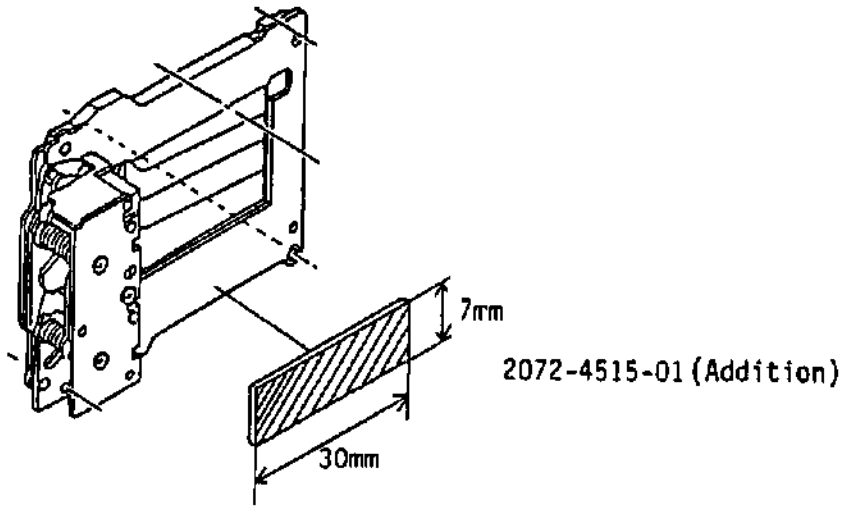
● Fixed resister (R52)

TYPE A	TYPE B
9431-1036-62 (1/16W, 10KΩ) 9432-1036-66 (1/10W, 10KΩ) Do not use type A instead of type B.	9431-1026-62 (1/16W, 1KΩ) 9432-1026-66 (1/10W, 1KΩ) Type B can be used instead of type A.

● Flexible P.C.board set

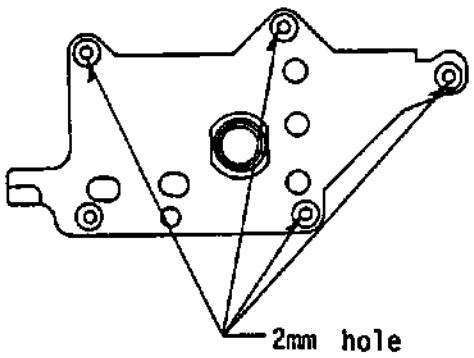
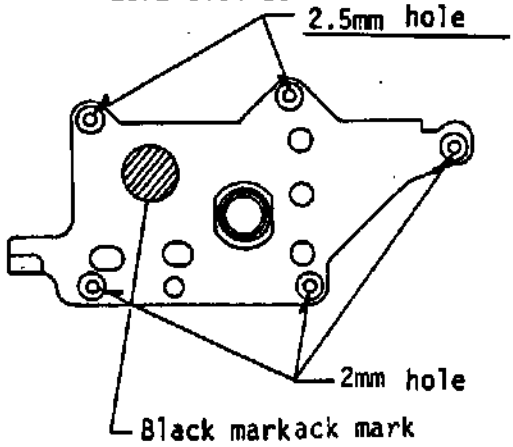
TYPE A	TYPE B
	
2072-0402-01 Do not use type A instead of type B.	2072-0402-02 Type B can be used instead of type A.
IC 6 M50756-905	IC 6 M50756-908
R 28 9431-3336-62 (1/16W, 33KΩ) R 29 R 30 9432-3336-66 (1/10W, 33KΩ)	Discontinued

● Shutter light shield

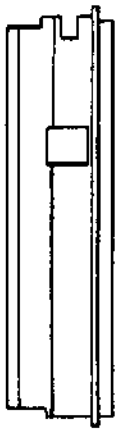
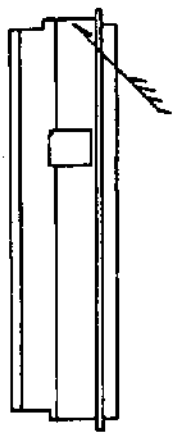


2072-4515-01 (Addition)

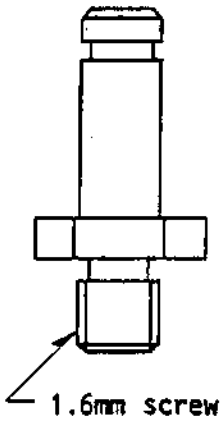
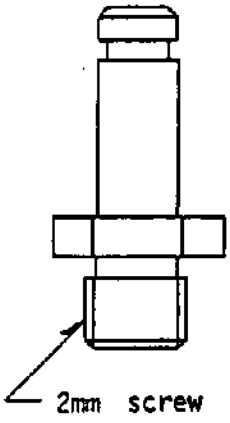
● Tripod socket base plate set

TYPE A	TYPE B
2072-0104-01	2072-0104-83
	
Do not use type A instead of type B.	Use type B only for the mirror box of which holes are off position. Marked red, yellow, orange, green or blue.

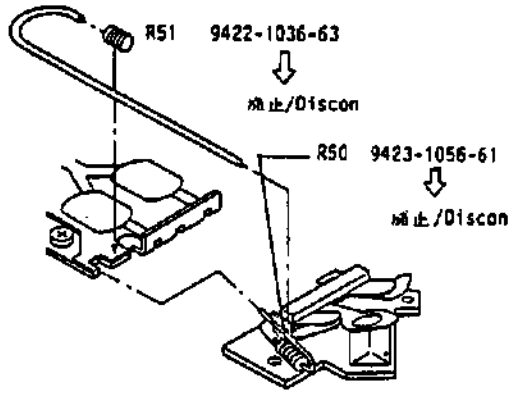
●Hinge cover

TYPE A	TYPE B
2072-1130-01	2072-1130-02
	
Do not use type A instead of type B.	Do not use type B instead of type A.

● Ring roller axis

TYPE A	TYPE B
2072-2506-01	2072-2506-03
	
Do not use type A instead of type B.	Do not use type B instead of type A.

● Fixed resister (R50, R51)



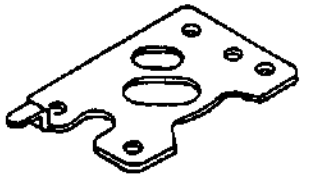
R 50	9431-1056-62 (1/16W, 1MΩ)
	9432-1056-66 (1/10W, 1MΩ)
R 51	9431-1036-62 (1/16W, 10KΩ)
	9432-1036-66 (1/10W, 10KΩ)

⇩

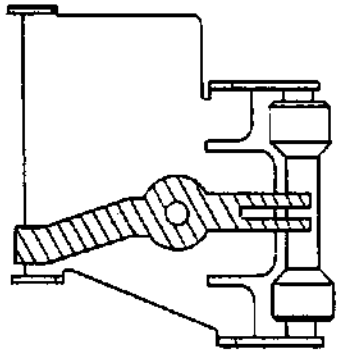
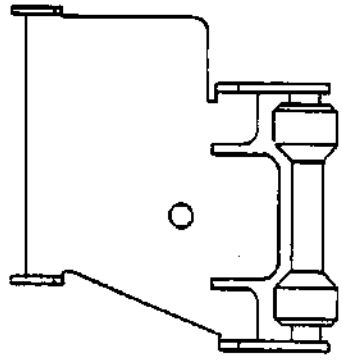
Discontinued

Related modification of flexible P.C.board A set (2072-0401-02)

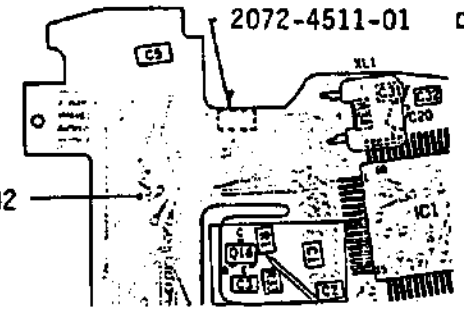
● Accessary shoe

TYPE A	TYPE B
2072-1054-01 ↓ 2071-1054-01 	2072-1054-02
2072-1057-01 	Discontinued
Type A can be used instead of type B as a set.	Type B can be used instead of type A.

● Roller holder set

TYPE A	TYPE B
2072-0342-01 	2073-0342-01 
Type A can be used instead of type B.	Type B can be used instead of type A.

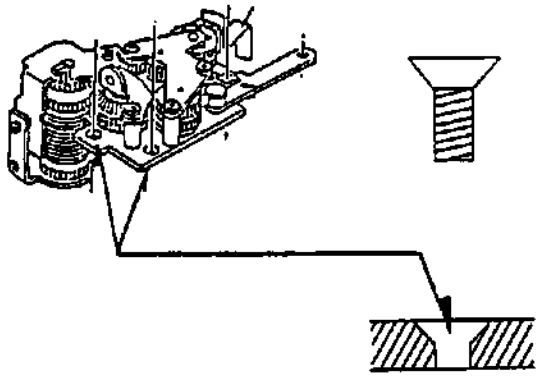
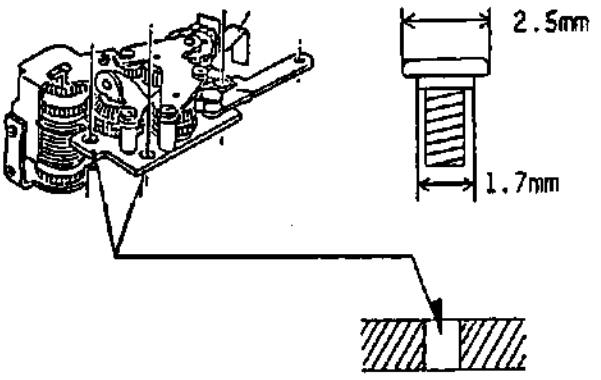
● Spacer



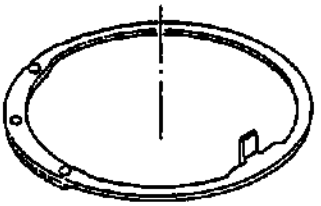
⇨ Discontinued

Necessary for previous flexible P.C.board A set (2072-0401-01)

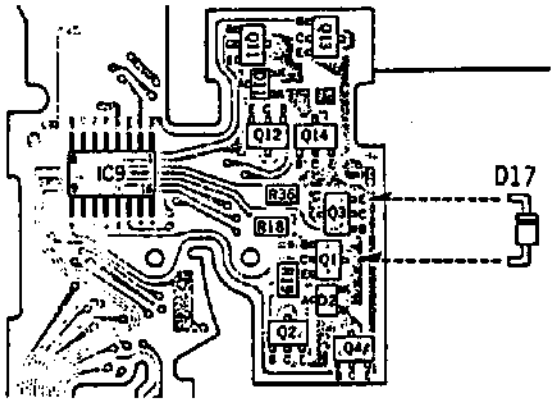
● Aperture controll base plate set

TYPE A	TYPE B
2072-0256-02 9615-1625-01 07	2072-0256-02 2072-9004-01
	
Type A can be used instead of type B as a set.	Type B can be used instead of type A as a set.

● Aperture ring set

TYPE A	TYPE B
	
2072-0250-01	2072-0250-02
Material: Aluminum Treatment: Alumite	Material: Stainless steel Treatment: Black paint
Do not use type A instead of type B.	Type B can be used instead of type A.

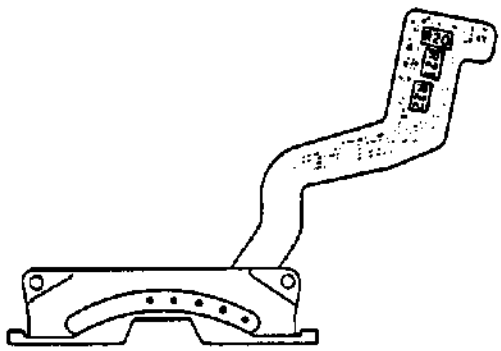
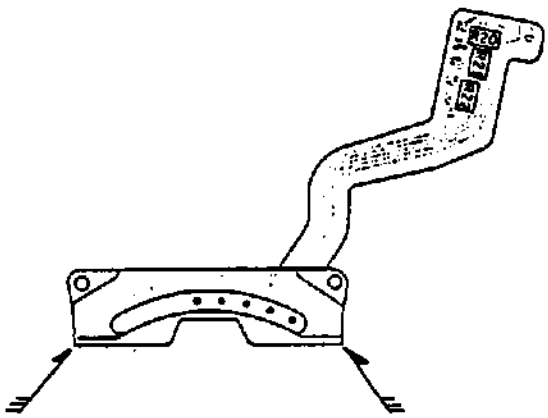
● Diode (D 17)



Flexible P.C. board B set
2072-0402-01, 02

9361-1631-11 (NEC)
Addition

● BL contact holder set

TYPE A	TYPE B
2072-0150-01  Type A can be used instead of type B.	2071-0150-01  Type B can be used instead of type A.

● Flexible P.C. board A set

TYPE A	TYPE B
2072-0401-01 Discontinued	2072-0401-02 Replace with 2072-0401-02,2072-0303-03, 2072-0423-01 as a set instead of type A (2072-0401-01).

SERVICE MANUAL SUPPLEMENTARY INFORMATION

Model 7000, α7000, MAXXUM 7000

Code No. 2072-200, -400, -600

■ Discontinuation of PC board-C set, Parts List for electrical elements

■ PC board-C set (2072-0451) will be discontinued with the related parts modifying in the step shown in the table below:

- For interchangeability of modified parts, see p. 4.
- With issue of this SUPPLEMENTARY INFORMATION, flexible PC boards-A, -B, and other electrical elements which have not been supplied until now, will be supplied as servicing parts. (ICs except IC_9 will not be supplied, as conventional.)
- For parts list of electrical elements, see p. 8—p. 10.

Modification step / Modified part	Before modification ⇨	1 (Middle of Oct. 1985) ⇨	2 (Beginning of Nov. 1985) ⇨	3 (End of Nov. 1985)
Winding base plate set (upper)	2072-0303-02	2072-0303-03	→	→
Release contact plate set	2072-0423-02	→	2072-0423-01	→
Flexible P.C board-A set	2072-0401-01	→	2072-0401-81	2072-0401-02
P.C board-C set	2072-0451-01	→	2072-0451-81	
Lead wire		→	ℓ_{48}, ℓ_{50}, ℓ_{51}, ℓ_{56}, ℓ_{63}: discon.※	ℓ_{52}, ℓ_{53}, ℓ_{54}, ℓ_{55}, ℓ_{58}, ℓ_{62}: discon.※

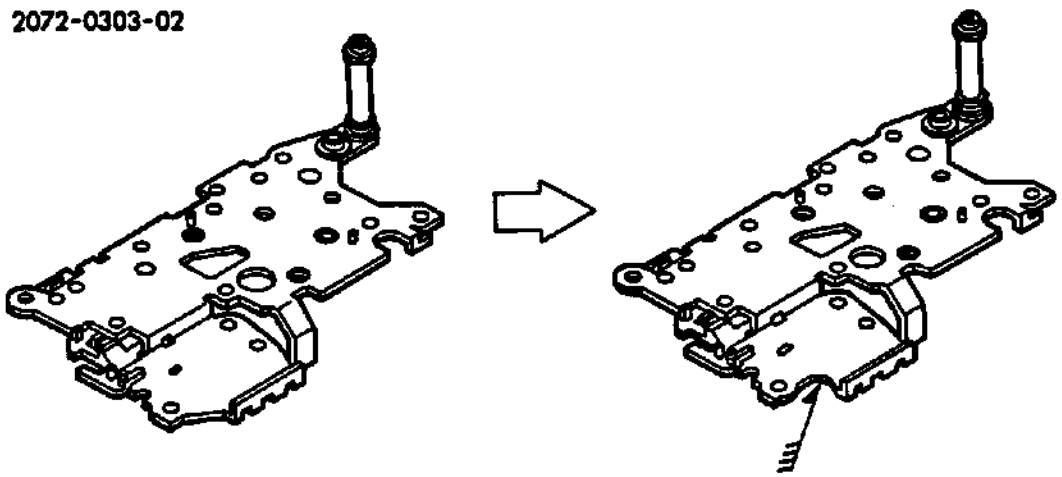
※For wiring schematic diagram in steps 2 and 3, see p. 7.

■ Modification details

1. Winding base plate set (upper)

2072-0303-01
2072-0303-02

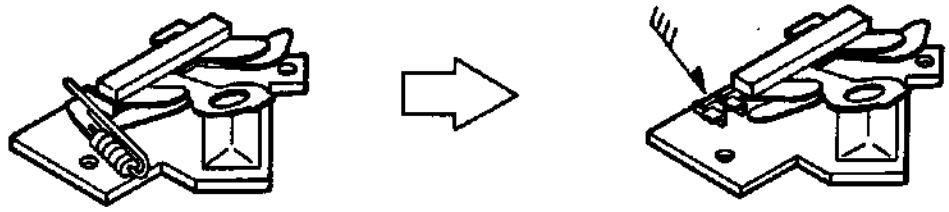
2072-0303-03



✝This information should be filed additionally to Service Manual.

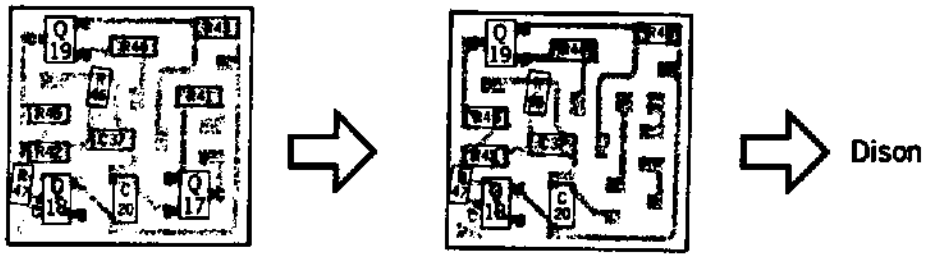
2 . Release contact plate set

2073-0423-02 → 2072-0423-01 (Back to previous type)



3 . P.C board-C set

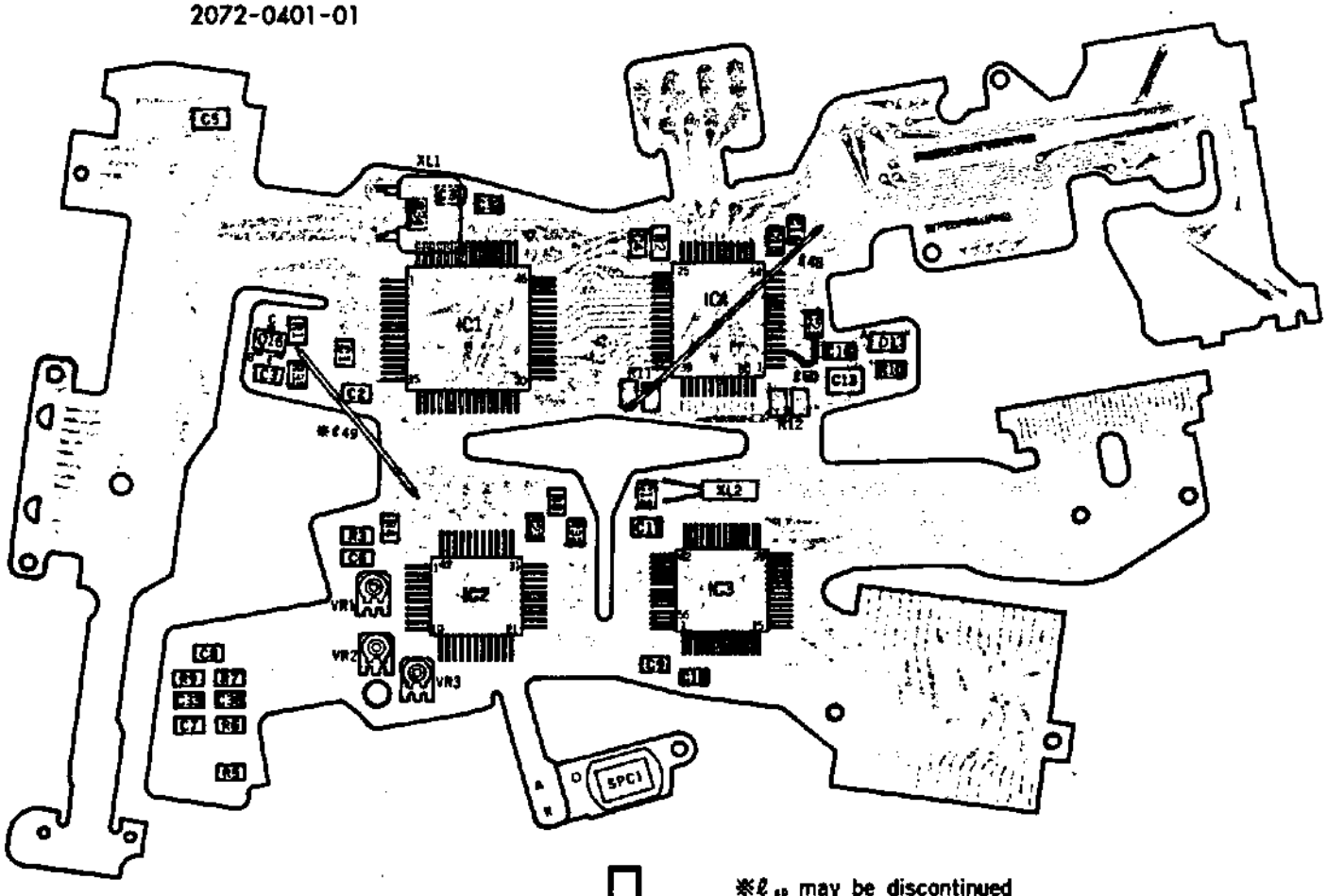
2072-0451-01 → 2072-0451-81 (No supply)



• Q_{17}, R_{41} discon

4 . Flexible P.C board-A set

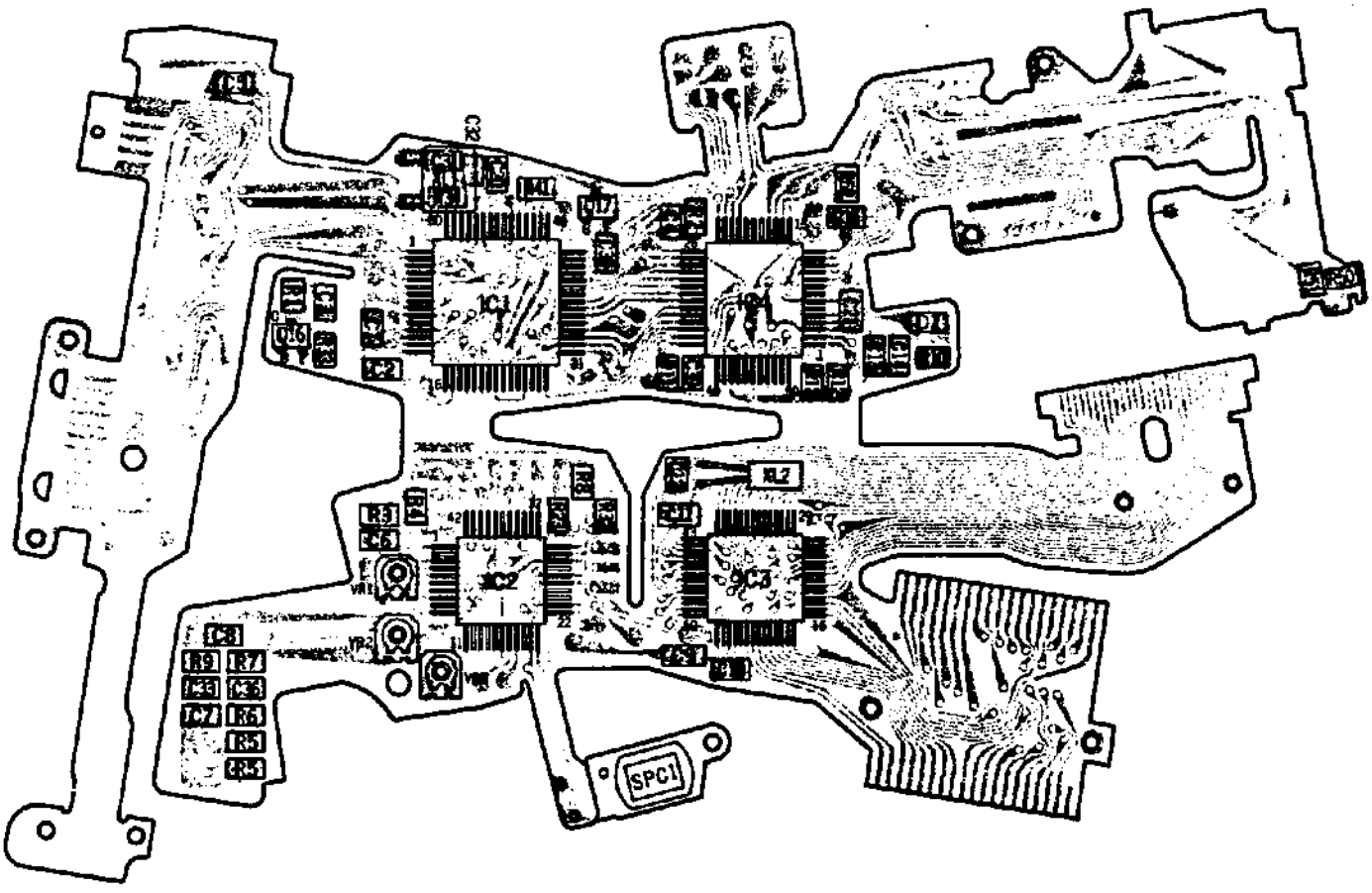
2072-0401-01



※ℓ_{49} may be discontinued
(by modification of printed wiring)

2072-0401-81 (No supply)
2072-0401-02

See page 4.



- ℓ_{48}, ℓ_{60} : discon.
- Q_{17}, R_{41}, R_{50}, R_{62}, C_{28}*, C_{38}, C_{39} : added.
- Printed wiring : modified.
- IC_1 : type modified.

  Step 2 (2072-0401-81)·····IC_1 type M50755-905

  → Step 3 (2072-0401-02)·····IC_1 type M50755-908

※ : C_{28} is not added to 2072-0401-81 (step 2).

Interchangeability

Table Combination of parts

Flexible P.C board-A set	2072-0401-01 ※1	2072-0401-81 ※2	2072-0401-02
Winding base plate set (upper)	2072-0303-01 2072-0303-02 2072-0303-03	2072-0303-03	2072-0303-03
Release contact plate set	2072-0423-02	2072-0423-01	2072-0423-01
P.C board-C set	2072-0451-01	2072-0451-81 2072-0451-01 ※3	

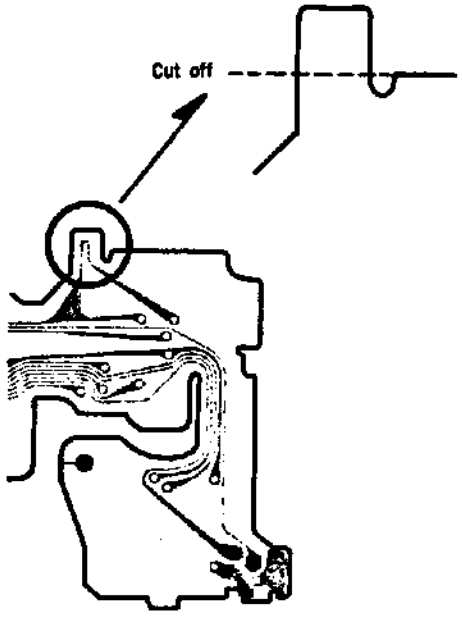
※1 : After 2072-0401-01 is out of stock, 2072-0401-02 will be supplied.
When 2072-0401-01 is not available for replacement, use 2072-0401-02 instead,, replacing winding base plate set, release contact plate set by 2072-0303-03, 2072-0423-01 respectively, and removing PC board-C set.

※2 : When replacing 2072-0401-81 (no servicing part), use 2072-0401-02 instead, removing PC board-C set.

※3 : When replacing 2072-0451-81 (no servicing part), use 2072-0451-01 instead, removing ℓ_{50}, ℓ_{51}.

Precaution 1

Before using 2072-0401-02, cut off the part shown below which keeps main switch ON; otherwise, main switch is not turned OFF.

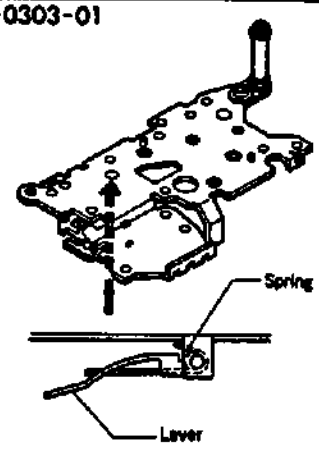
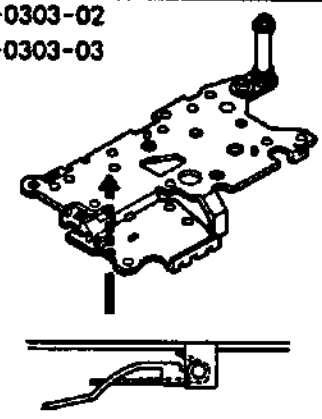
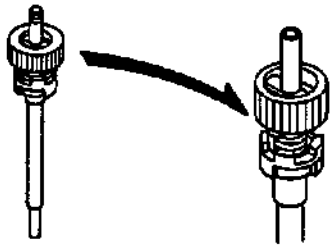
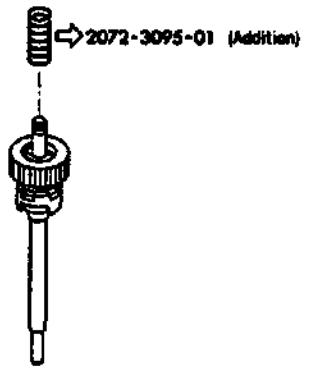


Precaution 2

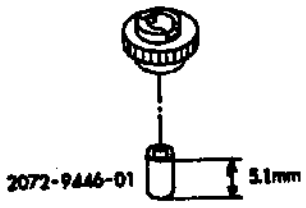
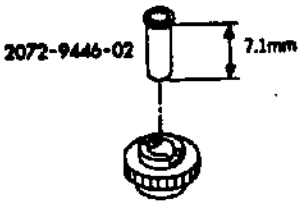
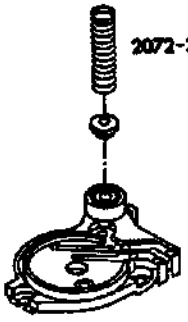
Take the following procedures, when replacing base plate (upper) 2072-0303-01/-02 by -03 for replacement of flexible PC board-A set 2072-0401-01 by -02:

① When the body has winding mechanism of type A shown in the figures below,
- Replace it by type B (0352, 3009, 3095, 9446, 3053).
- Unnecessary to replace by type B if the lever and the spring removed from 2072-0303-01 are replaced in 2072-0303-03.

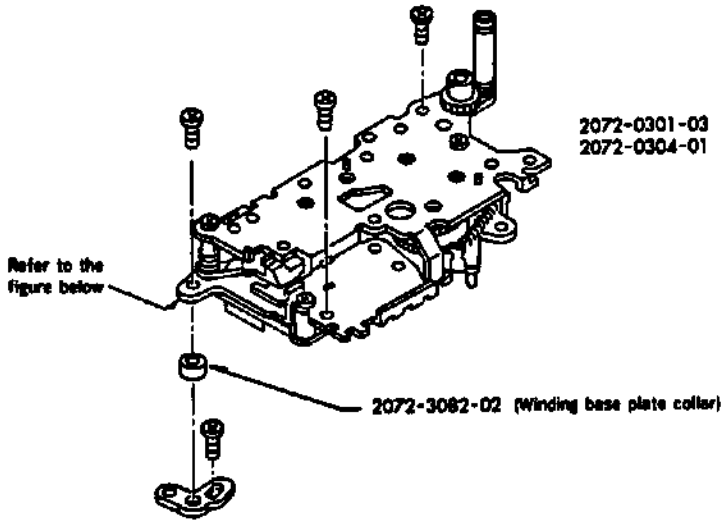
② If 2072-0804-01 (winding base plate set) is used instead of 2072-0303-03,
- Winding mechanism is unnecessary to replace by type B.
- REMOVE temporary screw for 0352 after installed to the body.
- Install 2072-3082-02 (winding base plate collar, see next page).
- Body may have no boss to position 3082, though.

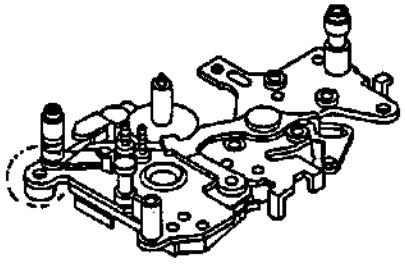
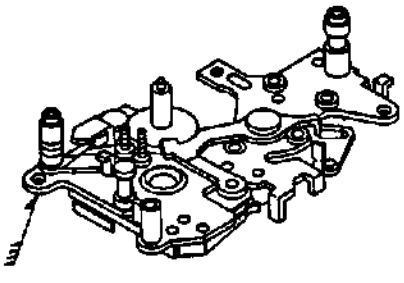
Type A	Type B
2072-0303-01 	2072-0303-02 2072-0303-03 
2072-0352-01 	2072-0352-02
2072-3009-03 	2072-3009-05
Not used	

To be continued to next page

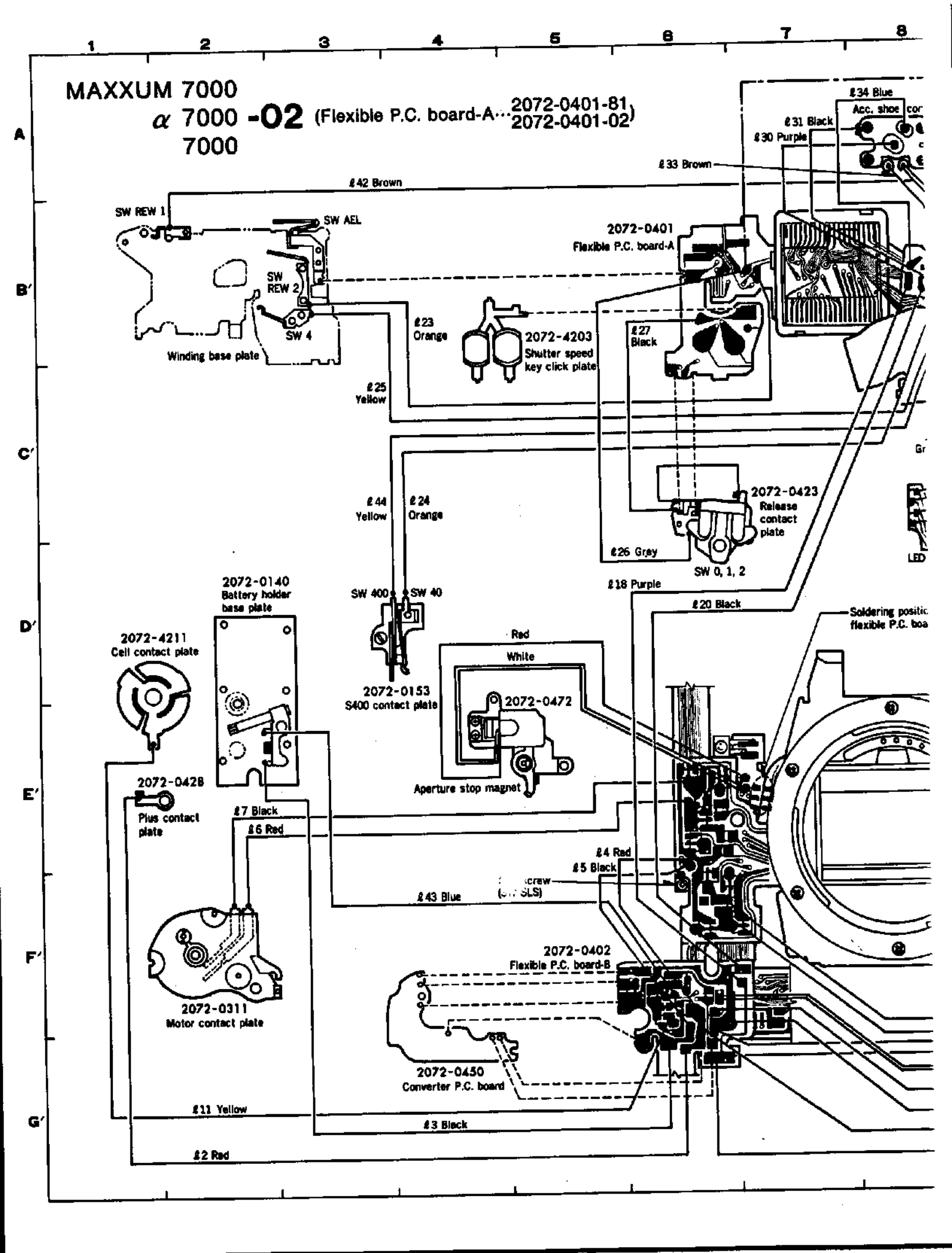
Type A	Type B
	
	Not used (Usable)

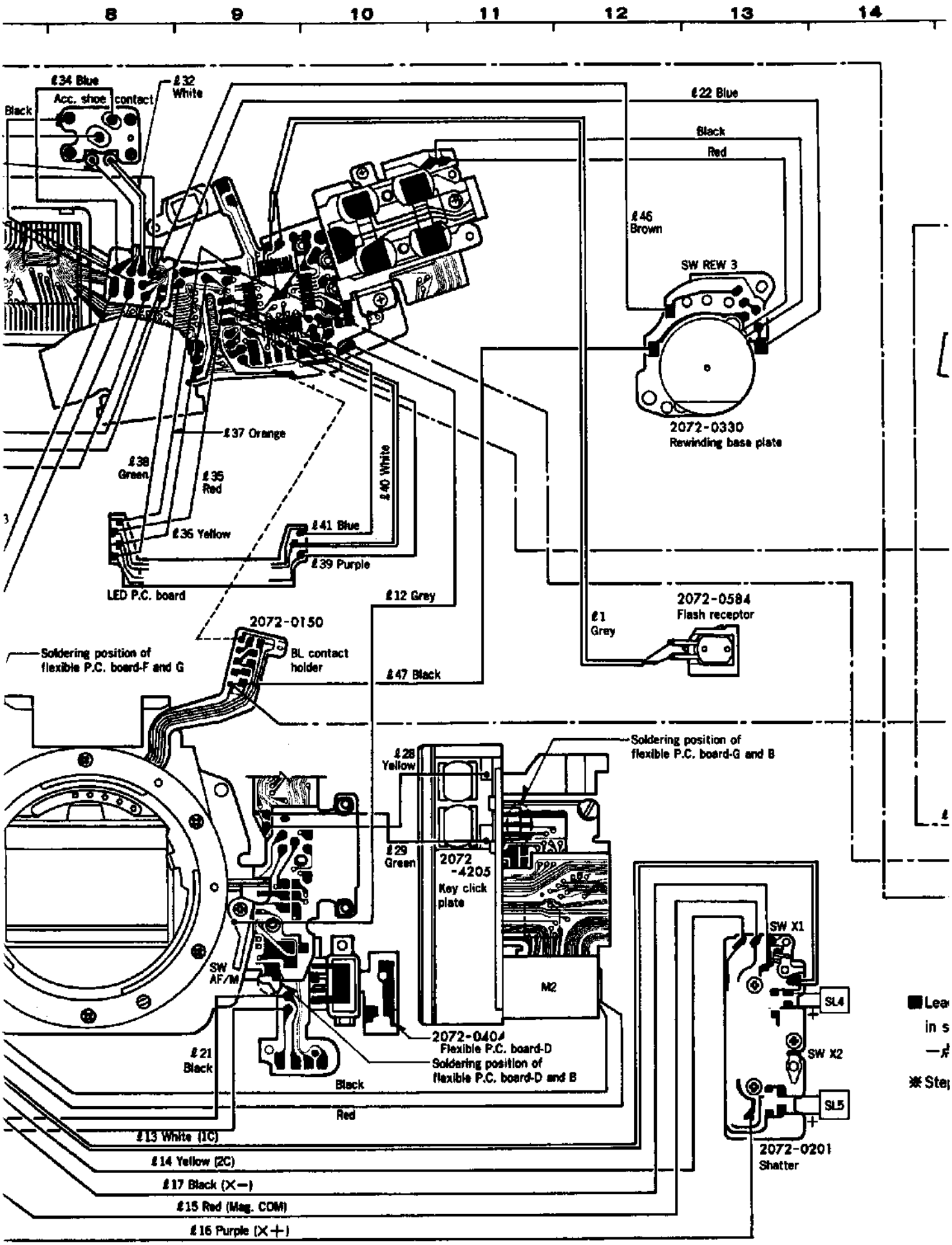
● Winding base plate collar

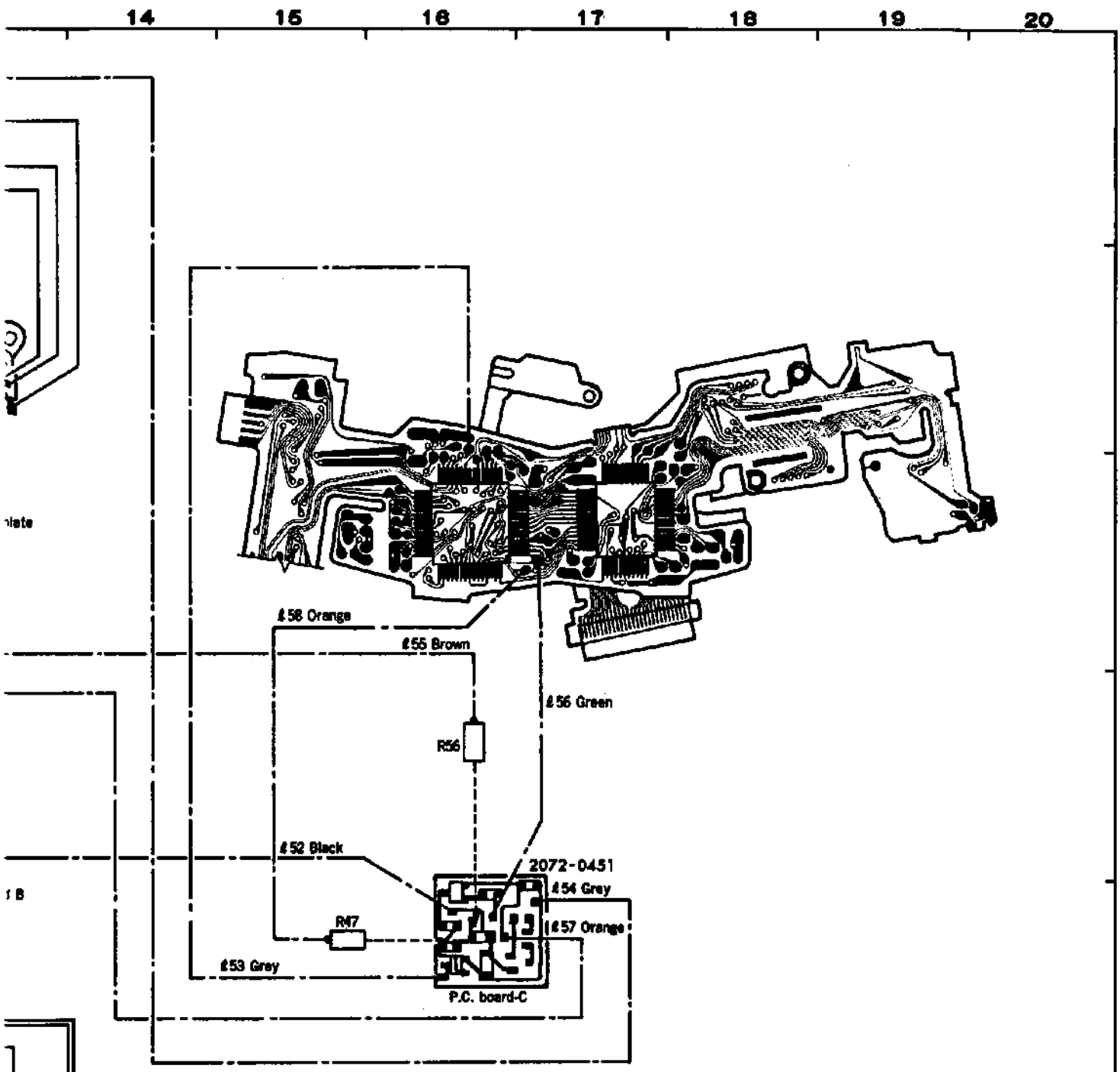


Type A	Type B
2072-0301-02 	2072-0301-03 2072-0304-01 

MAXXUM 7000
α 7000 -02 (Flexible P.C. board-A···2072-0401-81, 2072-0401-02)
7000




8
9
10
11
12
13
14
ℓ34 Blue
Acc. shoe contact
Black
ℓ32 White
ℓ22 Blue
Black
Red
ℓ46 Brown
SW REW 3
2072-0330
Rewinding base plate
ℓ37 Orange
ℓ38 Green
ℓ35 Red
ℓ40 White
ℓ36 Yellow
ℓ41 Blue
ℓ39 Purple
LED P.C. board
ℓ12 Grey
2072-0584
Flash receptor
ℓ1 Grey
2072-0150
BL contact holder
Soldering position of flexible P.C. board-F and G
ℓ47 Black
Soldering position of flexible P.C. board-G and B
ℓ28 Yellow
ℓ29 Green
2072 -4205
Key click plate
M2
SW AF/M
SW X1
SL4
SW X2
SL5
2072-0201
Shatter
2072-040
Flexible P.C. board-D
Soldering position of flexible P.C. board-D and B
ℓ21 Black
Black
Red
ℓ13 White (1C)
ℓ14 Yellow (2C)
ℓ17 Black (X−)
ℓ15 Red (Mag. COM)
ℓ16 Purple (X+)



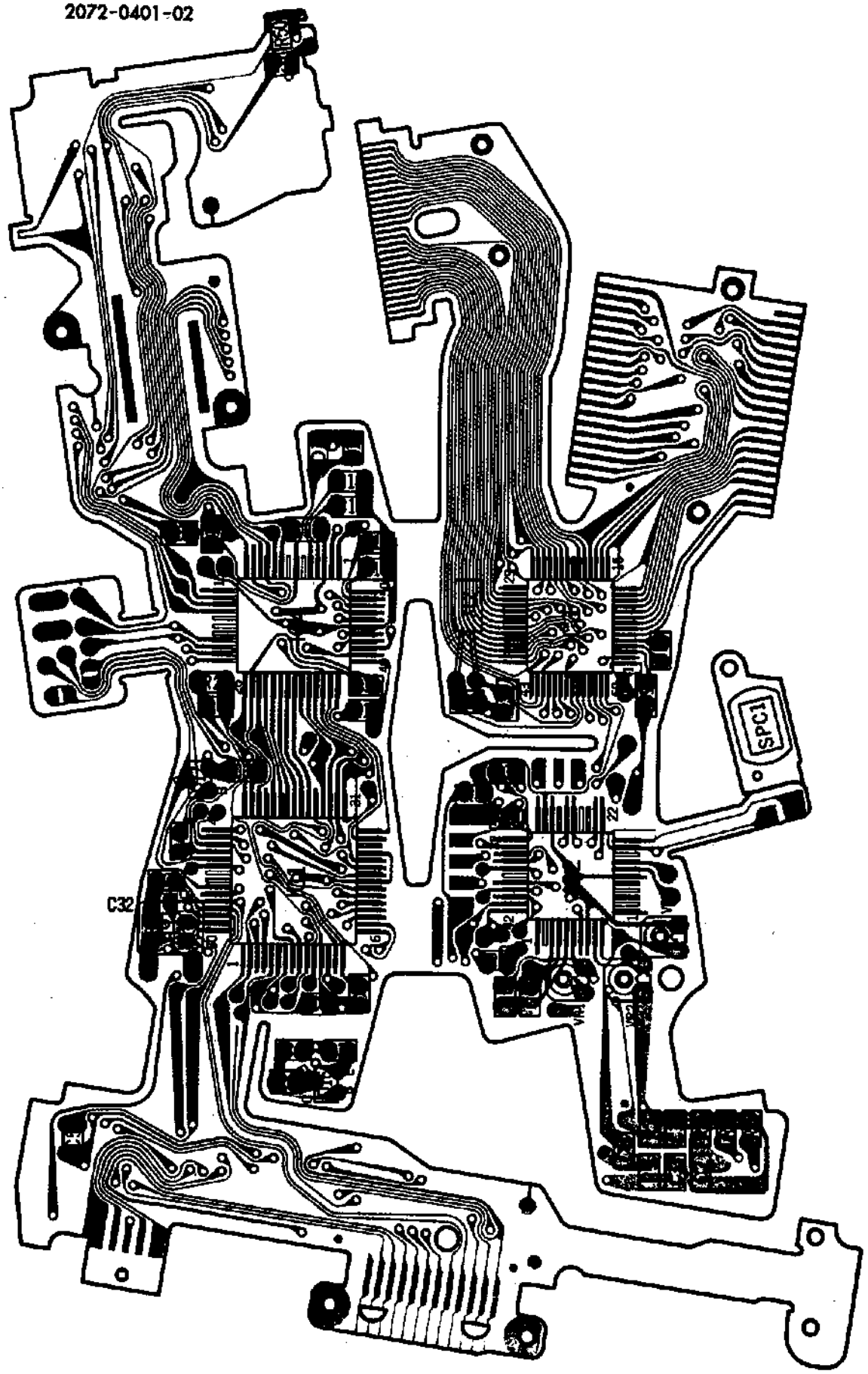
■Lead wires (shown by alternate long and short dash line) and PC board-C set (0451) are discontinued in step 3.※

一点鎖線のリード線及びC基板はstep 3※では廃止されています。

※Step 3 : See Service manual supplementary information No. 2072-001.

サービスマニュアルサプルメンタリーインフォメーションNo. 2072-001参照。

2072-0401-02



For additional information about the parts for 0401 not shown here, see parts list p. 12.
このページ以外の0401構成部品はパーツリストP. 12を参照して下さい。

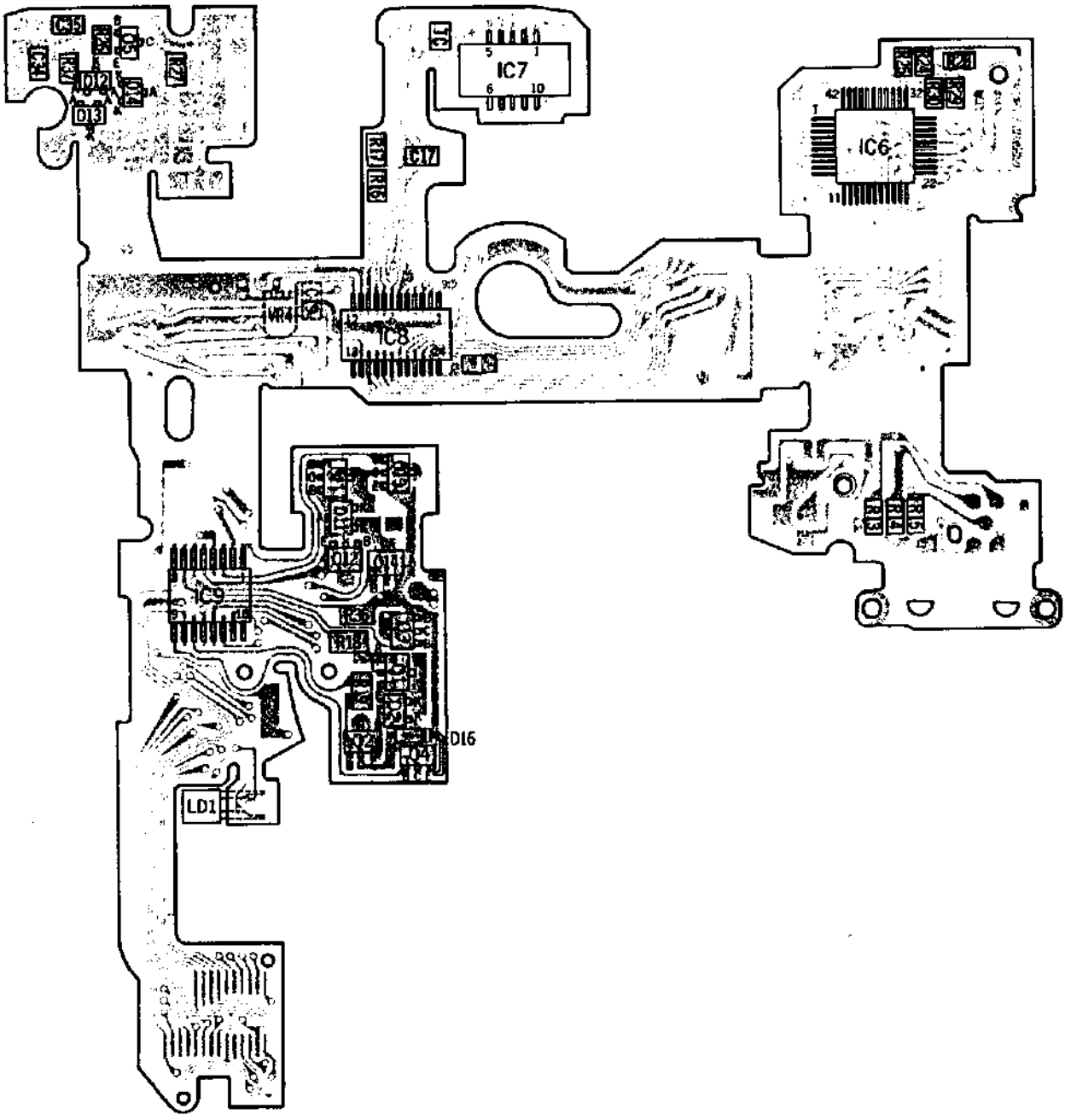
ASSY. PART NO. 2071-0401-02 ASSY. PART NAME: Flexible P.C board-A set フレキシブル基板Aセット

- ※ shows exclusive part for 2072-0401-02, -81. (C_{20} is not installed in 2072-0401-81)
- The others than ※ marked parts are common to 2072-0401-01.
- ※印の部品は2072-0401-02, -81専用を示します(但しC_{20}は2072-0401-81には含まれません)。
- ※印以外の部品は2072-0401-01と共通です。

SYMBOL	PART NO.	PART NAME	TYPE	QTY
Q_{16}, Q_{17}※	9362-1461-01	Transistor	MITSUBISHI 2SC3052	2
	9362-1461-02		MITSUBISHI 2SC3052	
	9362-1461-03		MITSUBISHI 2SC3052	
	9362-1633-01		NEC 2SC1623	
	9362-1633-02		NEC 2SC1623	
	9362-1633-03		NEC 2SC1623	
	9362-1633-04		NEC 2SC1623	
	9362-1032-01		TOSHIBA 2SC2712	
	9362-1032-02		TOSHIBA 2SC2712	
	9362-1032-03		TOSHIBA 2SC2712	
	9362-1032-04		TOSHIBA 2SC2712	
	9362-1464-01		ROHM 2SC2412K	
	9362-1464-02		ROHM 2SC2412K	
	9362-1464-03		ROHM 2SC2412K	
D_1	9361-1461-03	Diode	ROHM RLS-73	1
XL_1	9373-4361-01	Crystal resonator	CSA 4.19MG1	1
XL_2	9373-4161-01	Crystal resonator	KF-38G	1
	9373-4162-01		C-2-32.7	
	9373-4163-01		DT-26S	
	9373-4163-02		DT-26S	
R_1	9431-3346-62	Fixed resistor	1/8W 330KΩ	1
	9432-3346-66		1/8W 330KΩ	
R_2	9432-1068-61	Fixed resistor	1/8W 10MΩ	1
	9432-2068-61		1/8W 20MΩ	
R_3, R_{36}※	9431-1056-62	Fixed resistor	1/8W 1MΩ	2
	9432-1056-66		1/8W 1MΩ	
R_4	9431-2036-62	Fixed resistor	1/8W 20KΩ	1
	9432-2036-66		1/8W 20KΩ	
	9431-2436-62		1/8W 24KΩ	
	9432-2436-66		1/8W 24KΩ	
	9431-3036-62		1/8W 30KΩ	
	9432-3036-66		1/8W 30KΩ	
R_5	9422-2236-63	Fixed resistor	1/8W 22KΩ	0~1
	9422-2436-63		1/8W 24KΩ	
	9422-2736-63		1/8W 27KΩ	
	9422-3336-63		1/8W 33KΩ	
	9422-3936-63		1/8W 39KΩ	
	9422-5136-63		1/8W 51KΩ	
	9422-6836-63		1/8W 68KΩ	
	9422-1046-63		1/8W 100KΩ	
	9422-2046-63		1/8W 200KΩ	
R_6	9431-2246-62	Fixed resistor	1/8W 100KΩ	1
	9432-2246-66		1/8W 100KΩ	
R_7	9431-6826-62	Fixed resistor	1/8W 6.8KΩ	1
	9432-6826-66		1/8W 6.8KΩ	
R_8	9431-1546-62	Fixed resistor	1/8W 150KΩ	1
	9432-1546-66		1/8W 150KΩ	
	9431-1846-62		1/8W 180KΩ	
	9432-1846-66		1/8W 180KΩ	
	9431-2246-62		1/8W 220KΩ	
	9432-2246-66		1/8W 220KΩ	

SYMBOL	PART NO.	PART NAME	TYPE	QTY
R_1	9431-6226-62	Fixed resistor	1/8W 6.2KΩ	1
	9432-6226-66		1/8W 6.2KΩ	
R_{10}, R_{51}※, R_{52}※	9431-1036-62	Fixed resistor	1/8W 10KΩ	3
	9432-1036-66		1/8W 10KΩ	
R_{11}	9422-2746-63	Fixed resistor	1/8W 270KΩ	0~1
	9422-3346-63		1/8W 330KΩ	
	9422-4746-63		1/8W 470KΩ	
	9422-6846-63		1/8W 680KΩ	
R_{12}	9422-1036-63	Fixed resistor	1/8W 10KΩ	0~1
	9422-1536-63		1/8W 15KΩ	
	9422-2236-63		1/8W 22KΩ	
	9422-3336-63		1/8W 33KΩ	
	9422-6836-63		1/8W 68KΩ	
R_{21}, R_{22}	9431-3336-62	Fixed resistor	1/8W 33KΩ	2
	9432-3336-66		1/8W 33KΩ	
R_{23}	9431-4746-62	Fixed resistor	1/8W 470KΩ	1
	9432-4746-66		1/8W 470KΩ	
R_{24}	9431-2226-62	Fixed resistor	1/8W 2.2KΩ	1
	9432-2226-66		1/8W 2.2KΩ	
R_{41}※	9431-1056-62	Fixed resistor	1/8W 1MΩ	1
	9432-1056-66		1/8W 1MΩ	
VR_1	9472-1039-63	Variable resistor	1/8W 10KΩ	1
	9473-1039-63		1/8W 10KΩ	
VR_2, VR_3	9472-2239-63	Variable resistor	1/8W 22KΩ	2
	9473-2239-63		1/8W 10KΩ	
C_1, C_2	9565-2215-37	Condenser	(Ceramic) 220PF/50V	2
C_3, C_{16}, C_{38}※	9564-3335-69	Condenser	(Ceramic) 0.033μF/25V	3
	9564-3335-65		(Ceramic) 0.033μF/25V	
C_4, C_6, C_7	9564-1035-69	Condenser	(Ceramic) 0.01μF/25V	3
	9565-1035-37		(Ceramic) 0.01μF/50V	
C_5	9531-1555-68	Condenser	(Tantalum) 1.5μF/6.3V	1
	9532-1555-67		(Tantalum) 1.5μF/10V	
	9532-1555-68		(Tantalum) 1.5μF/10V	
C_8, C_{15}	9564-3325-69	Condenser	(Ceramic) 3300PF/25V	2
	9565-3325-37		(Ceramic) 3300PF/50V	
C_9, C_{10}, C_{35}, C_{36}	9564-1048-61	Condenser	(Ceramic) 0.1μF/25V	4
	9563-1048-61		(Ceramic) 0.1μF/15V	
C_{11}, C_{12}	9564-2204-65	Condenser	(Ceramic) 22PF/25V	2
	9565-2204-65		(Ceramic) 22PF/50V	
C_{13}	9564-1044-64	Condenser	(Ceramic) 0.1μF/25V	1
C_{14}	9564-3935-68	Condenser	(Ceramic) 0.039μF/25V	1
	9565-3935-63		(Ceramic) 0.039μF/50V	
C_{21}	9564-1535-37	Condenser	(Ceramic) 0.015μF/25V	1
	9565-1535-69		(Ceramic) 0.015μF/50V	
C_{31}, C_{32}	9564-3304-65	Condenser	(Ceramic) 33PF/25V	2
	9565-3304-65		(Ceramic) 33PF/50V	
C_{39}※	9564-2215-68	Condenser	(Ceramic) 220PF/25V	1
	9565-2215-63		(Ceramic) 220PF/50V	
C_{40}※	9564-1025-69	Condenser	(Ceramic) 1000PF/25V	1
	9565-1025-37		(Ceramic) 1000PF/50V	
SPC_1	2072-4292-01	SPC		1

2072-0402-01

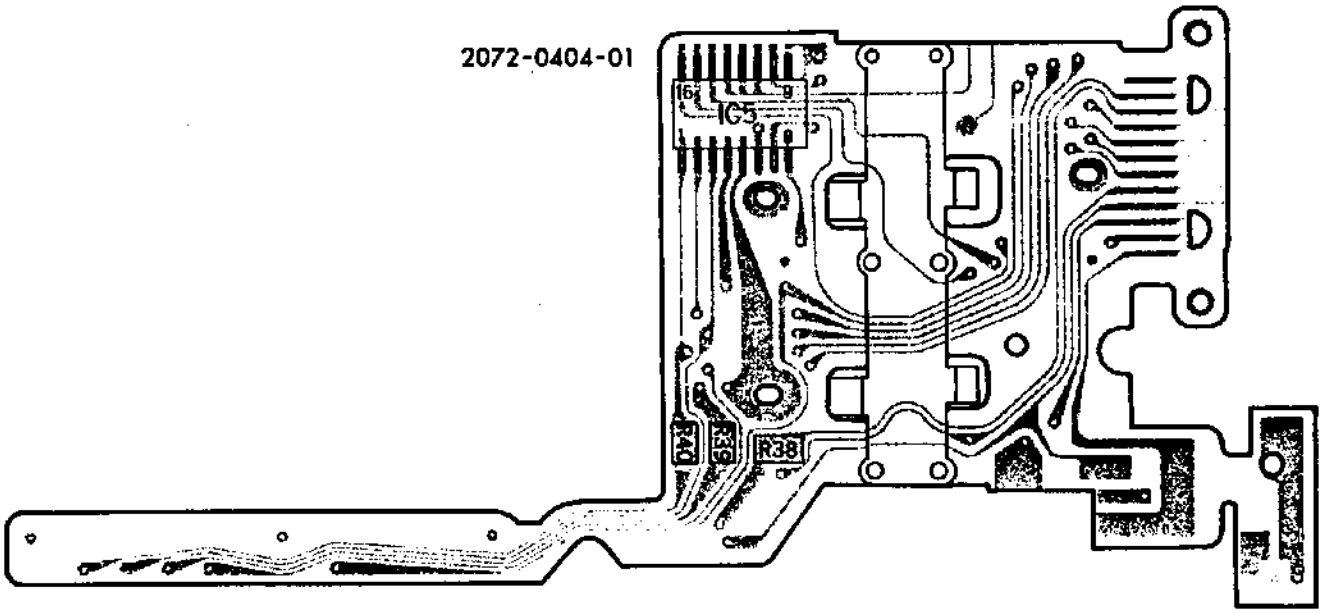


ASSY. PART NO. 2072-0402-01 ASSY. PART NAME: Flexible P. C board-B set フレキシブル基板Bセット

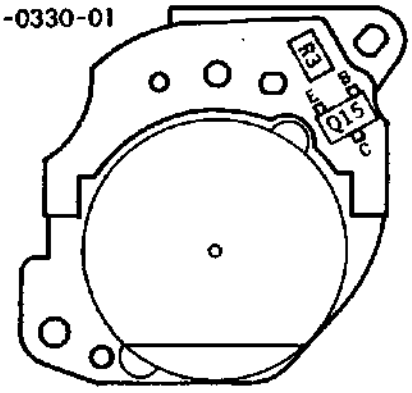
SYMBOL	PART NO.	PART NAME	TYPE	QTY
IC_4	2072-4309-01	IC	M51052P	1
LD_1	9353-2361-01	LED	LN25CP	1
D_2, D_{11}	9361-1462-01	Diode	MATSUSHITA MA151WA	1
	9361-1463-01		SANYO DCA015	
D_{14}	9361-1462-01	Diode	MATSUSHITA MA151WA	1
	9361-1463-01		SANYO DCA015	
	9361-1364-01		TOSHIBA 1SS179	
	9361-1364-02		TOSHIBA 1SS180	
	9361-1364-03		TOSHIBA 1SS181	
D_{12}, D_{13}	9361-1364-04	Diode	TOSHIBA 1SS182	2
	9361-1364-05		TOSHIBA 1SS183	
	9361-1364-06		TOSHIBA 1SS184	
	9361-1462-02		MATSUSHITA MA151WK	
	9361-1463-04		SANYO DCB015	
	9361-1465-01		MITSUBISHI MC2838	
Q_1, Q_2, Q_{11}, Q_{12}	9362-2361-02	Transistor	TOSHIBA 2SC2982	4
	9362-2361-03		TOSHIBA 2SC2982	
	9362-2361-04		TOSHIBA 2SC2982	
	9362-2461-01		SANYO 2SD1620	
	9362-2462-01		MATUSHITA 2SD1119	
	9362-2462-02		MATUSHITA 2SD1119	
	9362-2462-03		MATUSHITA 2SD1119	
Q_3, Q_4, Q_{13}, Q_{14}	9363-1463-02	Transistor	SANYO 2SB1120	4
	9363-1463-03		SANYO 2SB1120	
	9363-1464-02		MATSUSHITA 2CB1073	
	9363-1464-03		MATSUSHITA 2SB1073	
	9363-2361-02		TOSHIBA 2SA1314	
	9363-2361-03		TOSHIBA 2SA1314	
Q_5	9363-1033-01	Transistor	SANYO 2SA1179	1
	9363-1033-02		SANYO 2SA1179	
	9363-1033-03		SANYO 2SA1179	
	9363-1033-04		SANYO 2SA1179	
	9363-1363-01		TOSHIBA 2SA1298	
	9363-1363-02		TOSHIBA 2SA1298	
	9363-1461-01		NEC 2SB736	
	9363-1461-02		NEC 2SB736	
	9363-1461-03		NEC 2SB736	
	9363-1461-04		NEC 2SB736	
	9363-1461-05		NEC 2SB736	
TC	9372-2462-01	Thermistor	150-203-13004 (20KΩ)	1
R_{13}, R_{15}	9431-1826-62	Fixed resistor	1/6W 1.8KΩ	2
	9432-1826-66		1/6W 1.8KΩ	
R_{14}	9431-1026-62	Fixed resistor	1/6W 1KΩ	1
	9432-1026-66		1/6W 1KΩ	
R_{16}	9431-2736-62	Fixed resistor	1/6W 27KΩ	1
	9432-2736-66		1/6W 27KΩ	
R_{17}	9431-8236-62	Fixed resistor	1/6W 82KΩ	1
	9432-8236-66		1/6W 82KΩ	
R_{18}, R_{19}	9432-1016-65	Fixed resistor	1/6W 100Ω	2
R_{24}, R_{25}	9431-1046-62	Fixed resistor	1/6W 100KΩ	1
	9432-1046-66		1/6W 100KΩ	
R_{26}, R_{28}, R_{29}, R_{30}, R_{31}	9431-3336-62	Fixed resistor	1/6W 33KΩ	5
	9432-3336-66		1/6W 33KΩ	
R_{27}	9431-2226-62	Fixed resistor	1/6W 2.2KΩ	1
	9432-2226-66		1/6W 2.2KΩ	

SYMBOL	PART NO.	PART NAME	TYPE	QTY
R_{37}	9431-2236-62	Fixed resistor	1/8W 22KΩ	1
	9432-2236-66		1/8W 22KΩ	
VR_4	9472-3339-64	Variable resistor	1/8W 33KΩ	1
C_{17}	9533-1055-68	Condenser	(Tantalum) 1μF/16V	1
	9533-1055-70		(Tantalum) 1μF/16V	
C_{18}	9564-6825-69	Condenser	(Ceramic) 6800PF/25V	1
	9565-6825-37		(Ceramic) 6800PF/50V	
C_{19}	9565-3328-65	Condenser	(Ceramic) 3300PF/50V	1
C_{34}, C_{35}	9564-1048-61	Condenser	(Ceramic) 0.1μF/25V	2
	9563-1048-61		(Ceramic) 0.1μF/15V	
D_{16}	9361-1631-11	Diode	NEC 1S953	1

2072-0404-01



2072-0330-01

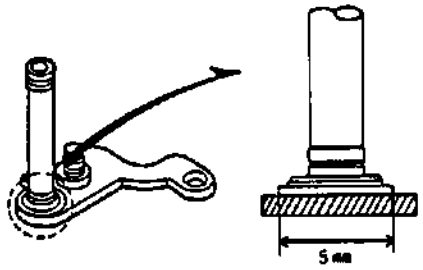
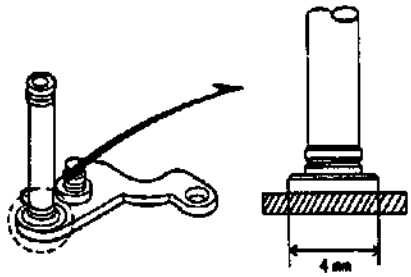
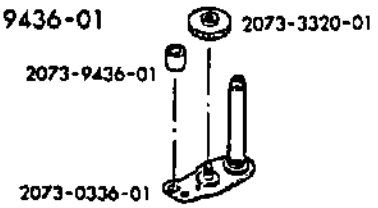
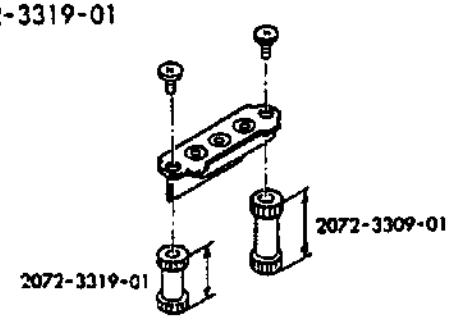
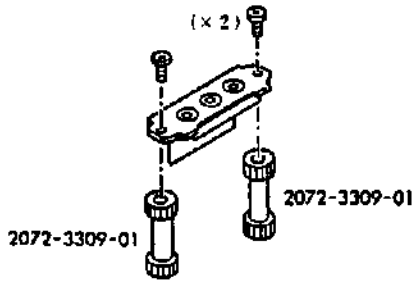
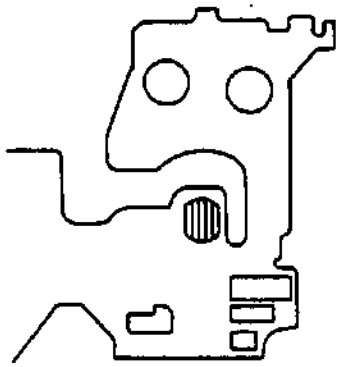
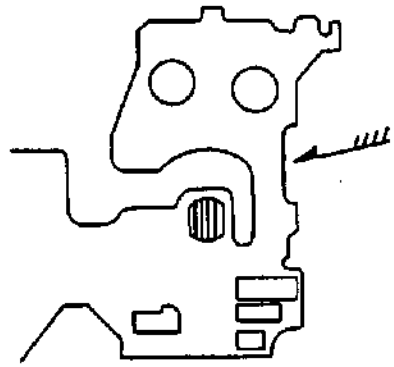


ASSY. PART NO. 2072-0404-01 ASSY. PART NAME: Flexible P. C board-D set フレキシブル基板Dセット

SYMBOL	PART NO.	PART NAME	TYPE	QTY
R_{36}, R_{39}, R_{48}	9431-1016-62	Fixed resistor	⅛W 100Ω	3

ASSY. PART NO. 2072-0330-01 ASSY. PART NAME: Rewinding base plate set (left) 巻戻し台板セット(左)

SYMBOL	PART NO.	PART NAME	TYPE	QTY
R_3	9431-1056-62	Fixed resistor	⅛W 1MΩ	1
Q_{16}	9362-1032-01	Transistor	TOSHIBA 2SC2712	1
	9362-1032-02		TOSHIBA 2SC2712	
	9362-1032-03		TOSHIBA 2SC2712	
	9362-1032-04		TOSHIBA 2SC2712	
	9362-1461-01		MITSUBISHI 2SC3052	
	9362-1461-02		MITSUBISHI 2SC3052	
	9362-1461-03		MITSUBISHI 2SC3052	
	9362-1464-01		ROHM 2SC2412K	
	9362-1464-02		ROHM 2SC2412K	
	9362-1464-03		ROHM 2SC2412K	
	9362-1633-01		NEC 2SC1623	
	9362-1633-02		NEC 2SC1623	
	9362-1633-03		NEC 2SC1623	
	9362-1633-04		NEC 2SC1623	

Type A	⇨	Type B
2072-0331-01 		2073-0331-01 
Not used 使用せず		2073-0336-01 2073-3320-01 2073-9436-01 
2072-3084-01 		2072-0384-01 Flexible board base plate set フレキ敷板セット
2072-3309-01 2072-3319-01 		2072-3309-01 (× 2) 
2072-0401-02 		2072-0401-82 

SERVICE MANUAL SUPPLEMENTARY INFORMATION

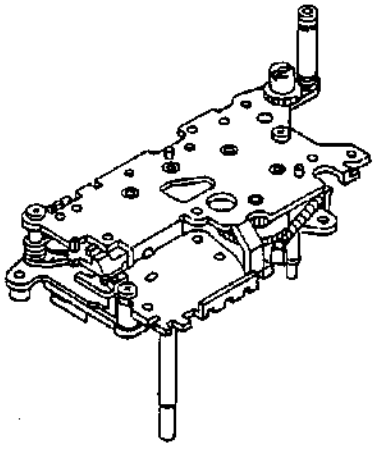
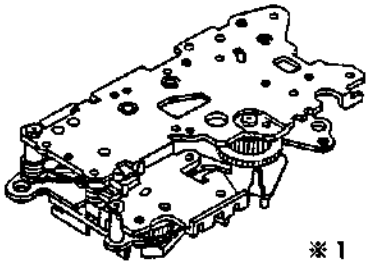
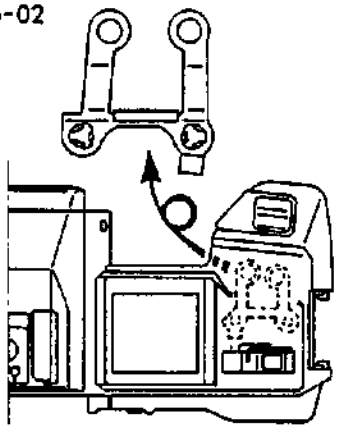
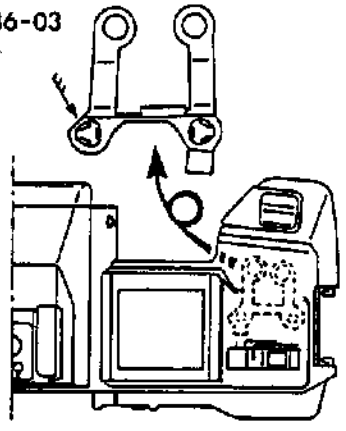
7000, α7000, MAXXUM7000

2072-200, -400, -600

■ Modification of winding base plate

■ Modified 2073's winding base plate is used for 2072.

■ Modified parts

Type A	⇨	Type B
2072-0304-01 		2073-0309-01 Winding base plate set 巻上げ台板セット  ※1 • See p. 4 for parts composition.
2032-0132-01 2032-0136-02 		2072-0132-02 2072-0136-03 

Continued on next page

※1 : Sprocket axis set (0352), changeover gear spring (3095), collar (9446), and changeover gear (3009) are included in Type A ; not in Type B (supplied as single parts).

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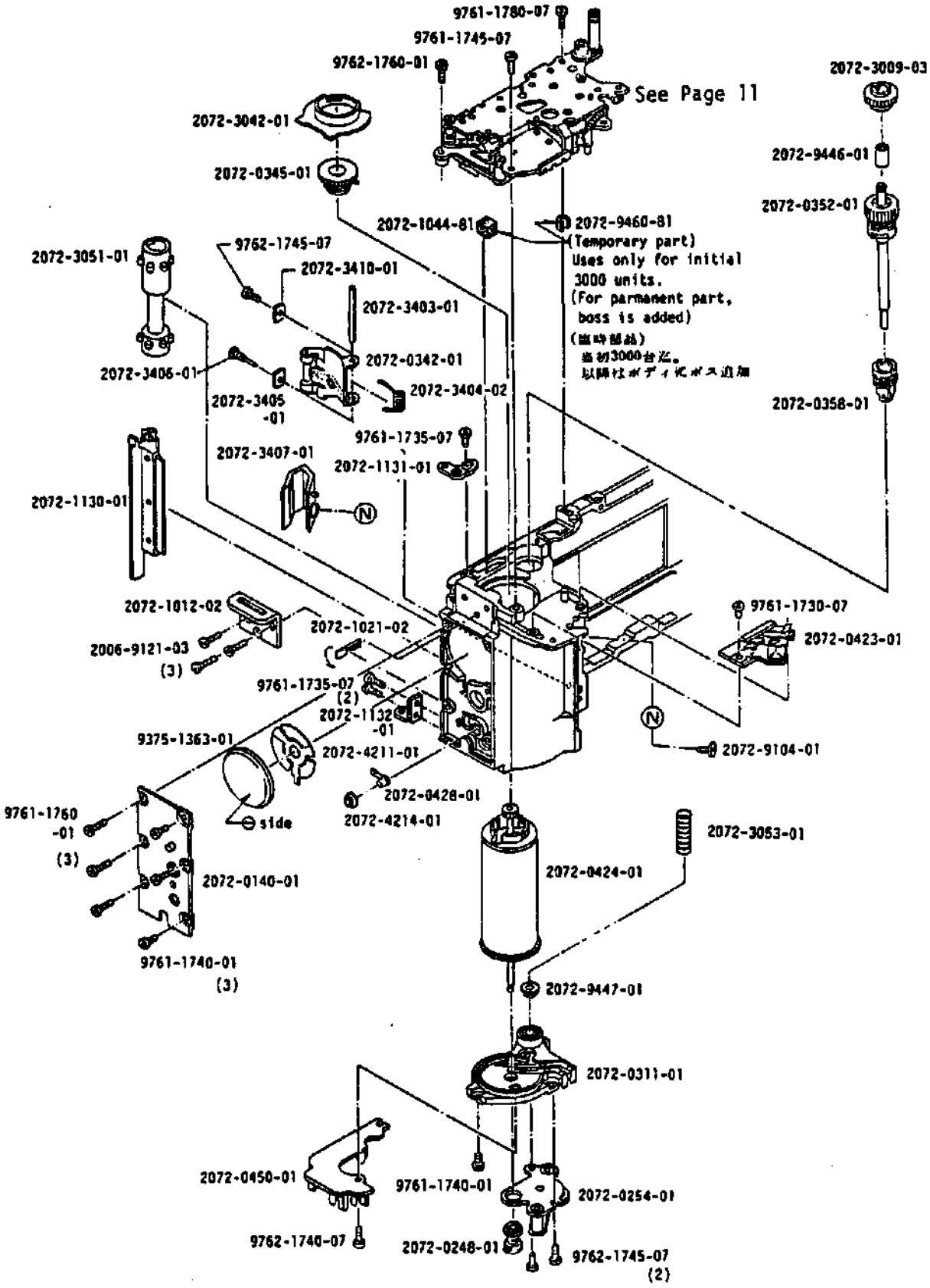
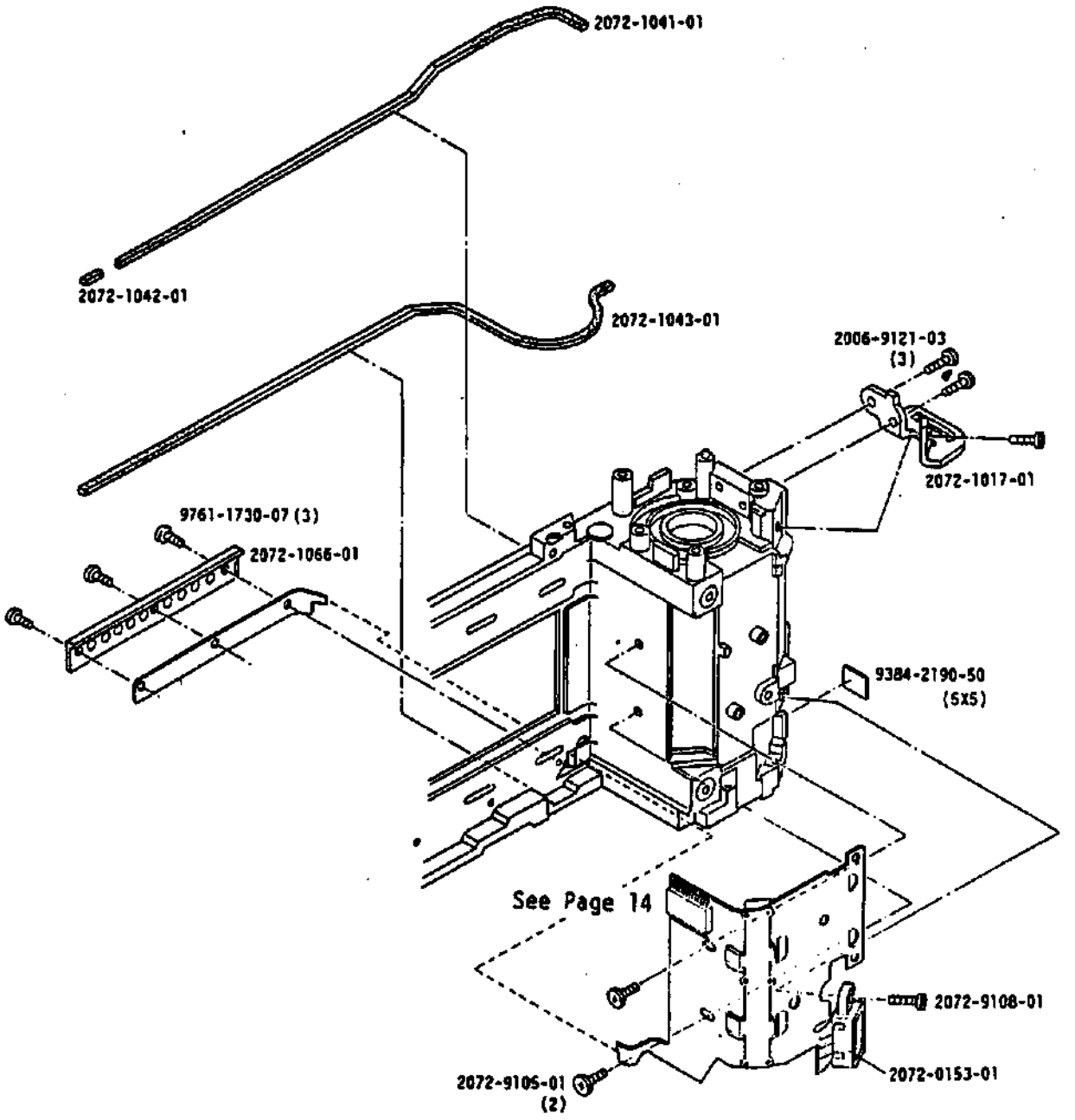
3309 E. State Blvd.
Fort Wayne, IN 46805
(219) 484-2643

MAXUM 7000 (2072-600)
α 7000 (2072-400)
7000 (2072-200)



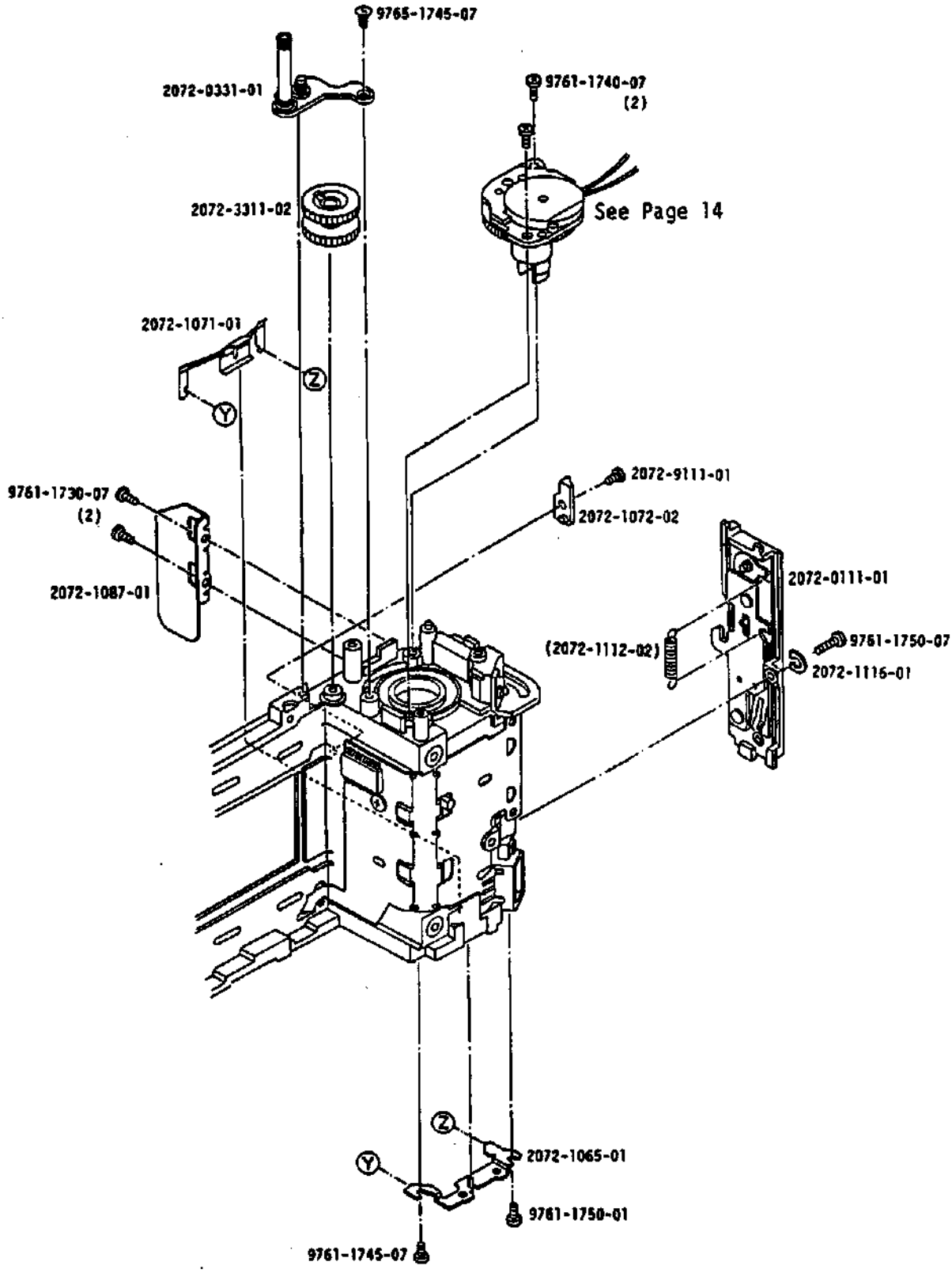
Part No.	Part Name		Qty.
2072-0153-01	Remote control terminal set	リモコンターミナルセット	1
2072-1017-01	Strap eyelet (Left)	ストラップ取付環（左）	1
2072-1041-01	Body light shield sponge - A	ボディ遮光片A	1
2072-1042-01	Body light shield sponge - B	ボディ遮光片B	1
2072-1043-01	Body light shield sponge - C	ボディ遮光片C	1
2072-1066-01	Contact pin cover	信号ピンカバー	1
2072-9105-03	Screw	止めねじ	2
2072-9108-01	Screw	止めねじ	1
2006-9121-03	Tapping screw	止めねじ	3
9384-2190-50	Double - faced tape (per roll)	両面テープ	1
9761-1730-07	Tap tite screw	十字穴付タップタイトねじ	3

MAXUM 7000 (2072-600)
∝ 7000 (2072-400)
7000 (2072-200)



Part No.	Part Name		Qty.
2072-0111-01	Back cover release plate set	裏蓋開閉板セット	1
(2072-1112-02)	Back cover release spring	裏蓋ロックSP	1
2072-0331-01	Rewinding base plate set (Right side)	巻戻し台板セット（右）	1
2072-1065-01	Contact pin base plate	ブラケット用信号ピン台板	1
2072-1071-01	Film cartridge pressure plate	パト回転防止板	1
2072-1072-02	Film cartridge receiver	パトロ金受	1
2072-1087-01	Side spring	サイドバネ	1
2072-1116-01	Washer	開閉板ワッシャー	1
2072-3311-02	Rewinding gear - F	巻戻しギヤーF	1
2072-9111-03	Screw	止めねじ	1
9761-1730-07	Tap tite screw	十字穴付タップタイトねじ	2
9761-1740-07	Tap tite screw	十字穴付タップタイトねじ	2
9761-1745-07	Tap tite screw	十字穴付タップタイトねじ	1
9761-1750-01	Tap tite screw	十字穴付タップタイトねじ	1
9761-1750-07	Tap tite screw	十字穴付タップタイトねじ	1
9765-1745-07	Tap tite screw	十字穴付タップタイトねじ	1

MAXUM 7000 (2072-600)
α 7000 (2072-400)
7000 (2072-200)

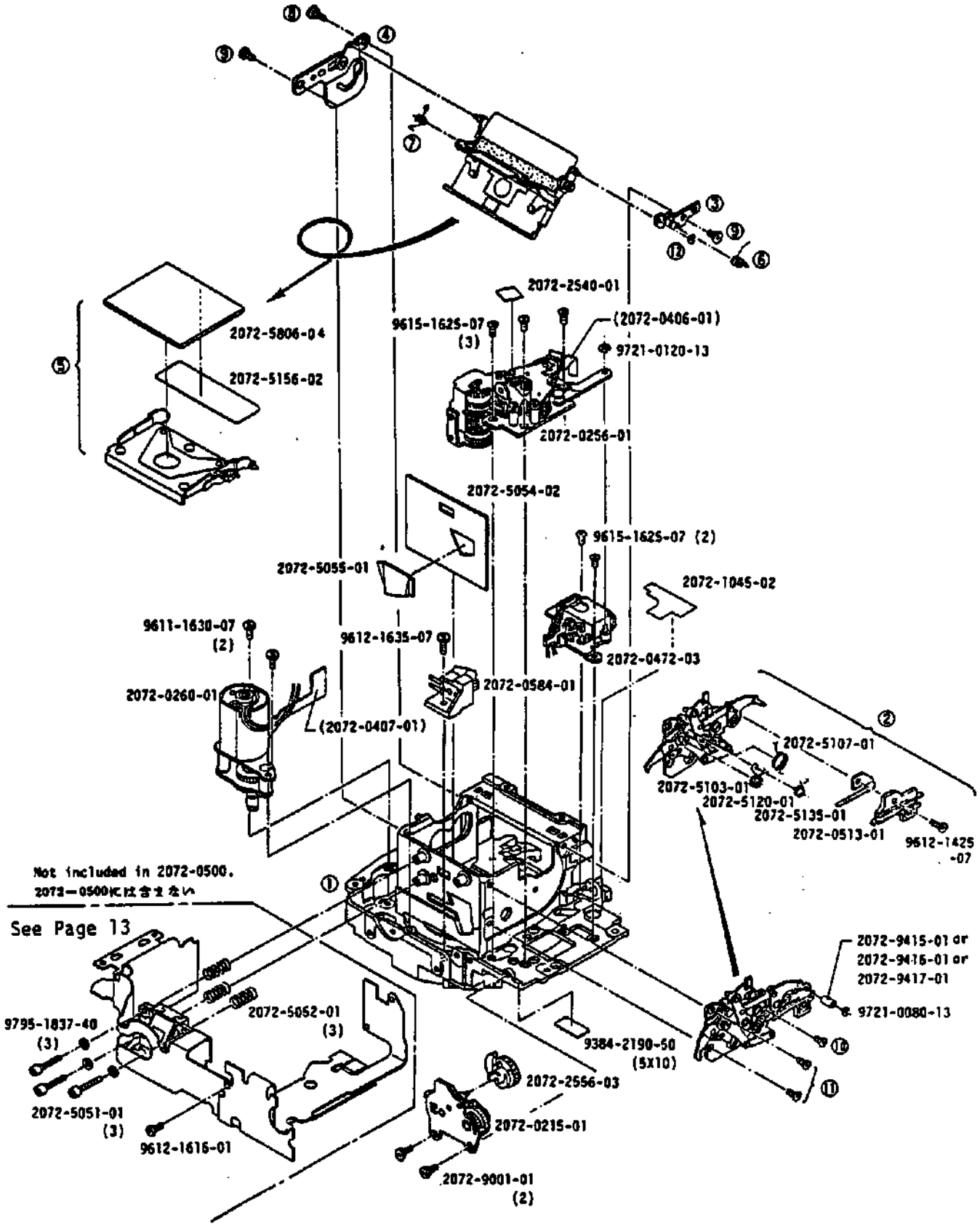


	Part No.	Part Name		Qty.
	2072-0215-01	Clutch base plate set	クラッチ台板セット	1
P.5,16	2072-0256-01,02	Aperture control base plate set	絞り制御台板セット	1
	(2072-0406-01)	Photointerrupter - 1 set	フォトインタラプター1セット	1
	2072-0260-01	AF drive set	AF駆動セット	1
	(2072-0407-01)	Photointerrupter - 2 set	フォトインタラプター2セット	1
	2072-0472-03	Aperture stop magnet set	絞りストップマグネットセット	1
	2072-0513-01	S400 contact plate set	S400接片台板セット	1
	2072-0584-01	Flash receptor set	ストロボプリズム台セット	1
	2072-1045-02	Light shield plate	セルフ遮光片	1
	2072-2540-01	Shutter isolation sheet	シャッター絶縁シート	1
	2072-2556-03	Bevel gear	カサ歯車	1
	2072-5051-01	AF adjustment screw	AF調整ビス	3
	2072-5052-02	AF adjustment spring	AF調整SP	3
	2072-5054-02	Flare shield plate	フレア防止シート	1
	2072-5055-01	Light shield plate	ミラーボックス遮光板	1
	2072-5103-01	Mirror up spring	ミラーアップレバーSP	1
	2072-5107-01	Mirror up over charge spring	ミラーアップオーバーチャージSP	1
	2072-5120-01	Shutter release lever spring	Sレリーズレバー-SP	1
	2072-5135-01	Earth contact	S40アース接片	1
	2072-5156-02	Light shield sheet	遮光シート	1
	2072-5806-04	Mirror	主ミラー	1
	2072-9001-01	Screw	止めビス	2
P.16	2072-9004-01	screw		2
	2072-9415-01	Coller - A (ø2.5)	Sチャージ調整カラーA	1
	2072-9416-01	Coller - B (ø3)	Sチャージ調整カラーB	
	2072-9417-01	Coller - C (ø2)	Sチャージ調整カラーC	
P.6	9384-2180-10	Irrax tube (UL)		1
	9384-2190-50	Oouble - faced tape (per roll)	両面テープ	1
	9611-1630-07	Phillips type screw	十字穴付なべ小ねじ	2
	9612-1425-07	Phillips type screw	十字穴付なべ小ねじ	1
	9612-1616-01	Phillips type screw	十字穴付なべ小ねじ	1
	9612-1635-07	Phillips type screw	十字穴付なべ小ねじ	1
	9615-1625-07	Phillips type screw	十字穴付皿小ねじ	4
	9721-0080-13	E - ring	Eリング	1
P.6	9721-0120-13	E - ring	Eリング	1
	9795-1837-40	Washer	薄ワッシャー	3
①		Mirror box set	ミラーボックスセット	1
②		Mirror operation plate set	ミラー台板セット	1
③		Mirror adjustment plate - A set	ミラー軸台板セット（右）	1
④		Mirror adjustment plate - B set	ミラー軸台板セット（左）	1
⑤		Mirror holder set	ミラーホルダーセット	1
⑥		Mirror spring	ミラーメインSP	1
⑦		Sub mirror spring	サブミラーSP	1
⑧		Screw	止めねじ	1
⑨		Screw	止めねじ	2
⑩		Phillips type screw	十字穴付皿小ねじ	1
⑪		Phillips type screw	十字穴付皿小ねじ	2
⑫		E - ring	Eリング	1

MAXXUM 7000 (2072-600)
α 7000 (2072-400)
7000 (2072-200)

■Parts numbered by ① to ⑫ are not for servicing. If needing part replacement, use relevant Mirror box assembly(2072-0500-01).

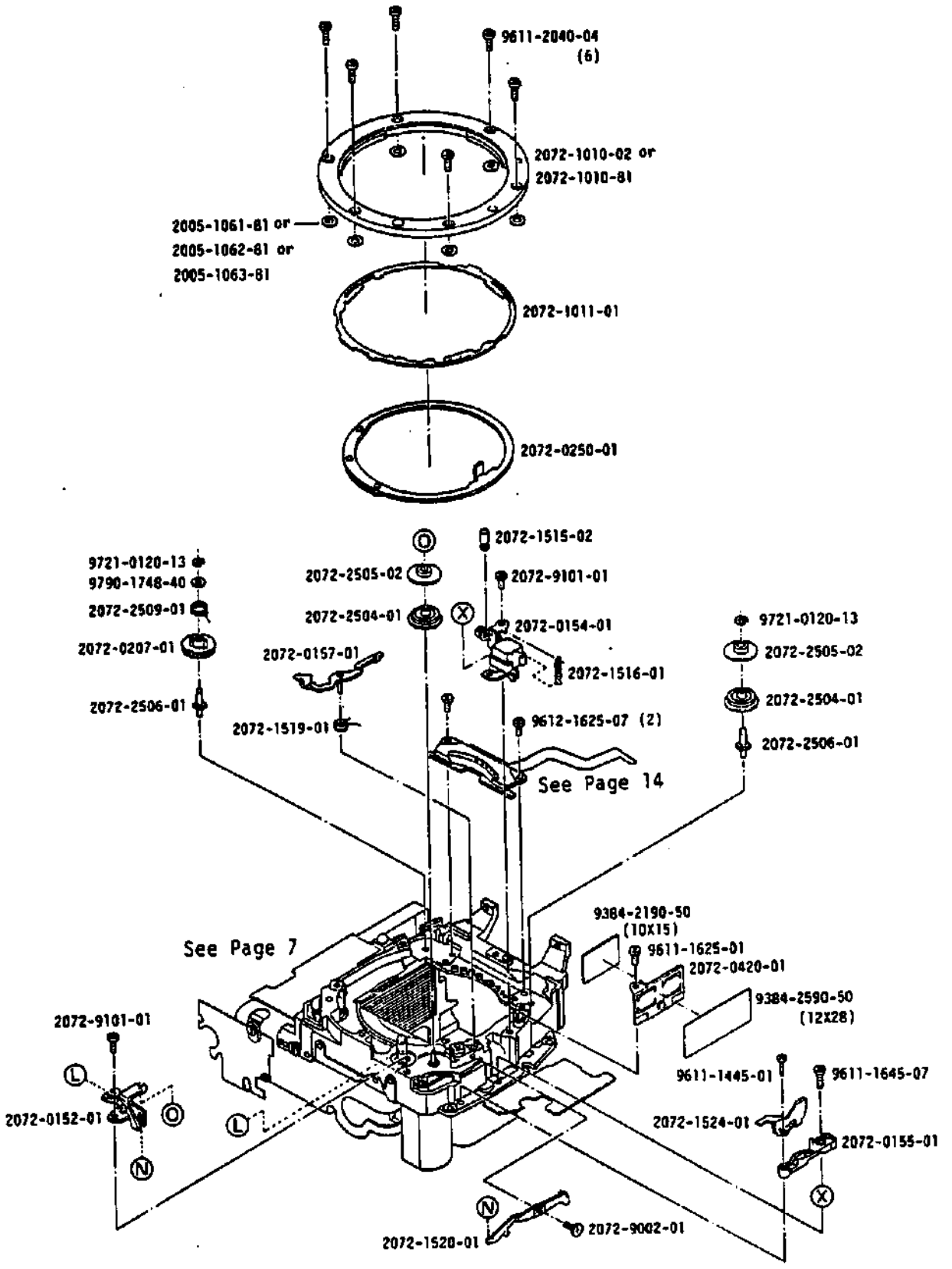
■下図の①～⑫は、部品供給しません。交換時はミラーボックス完成品 (2072-0500) に交換して下さい。



	Part No.	Part Name		Qty.
P.5	2072-0500-01	Mirror box assembly	ミラーボックス完成品	1
	2072-0152-01	Coupler lever	カプラーレバー	1
	2072-0154-01	Lens lock plate	ロック機構台セット	1
	2072-0155-01	Focus mode switch plate set	フォーカスモードSW接片台セット	1
	2072-0157-01	Lens lock lever set	保持レバーセット	1
	2072-0207-01	Ring gear set	リングギヤーローラセット	1
P.16	2072-0250-01,02	Aperture ring set	絞りリングセット	1
	2072-0420-01	Aperture key click plate set	アップダウンキー基板セット	1
	2072-1010-02	Bayonet lens mount	バヨネット座板	1
	2072-1010-81	Bayonet lens mount (-0.1mm)	バヨネット座板 (−0.1mm)	
	2072-1011-01	Bayonet spring	バヨネットSP	1
	2005-1061-81	Adjustment washer - A (t=0.02mm)	調整ワッシャーA	Some
	2005-1062-81	Adjustment washer - B (t=0.05mm)	調整ワッシャーB	
	2005-1063-81	Adjustment washer - C (t=0.1mm)	調整ワッシャーC	
	2072-1515-02	Lens lock pin	レンズロックピン	1
	2072-1516-01	Lens lock spring	レンズロックセットSP	1
	2072-1519-01	Lens lock lever spring	保持レバーSP	1
	2072-1520-01	Connecting lever	連動レバー	1
	2072-1524-01	Earth contact	フォーカスモードアース接片	1
P.5	2072-2477-01	Ring roller axis		1
P.5,6	2072-2504-01	Ring roller - A	リングローラーA	2
P.5	2072-2505-02	Ring roller - B	リングローラーB	2
P.14	2072-2506-01,03	Ring roller axis	リングローラー軸	2
	2072-2509-01	Aperture sub-spring	絞り込み補助SP	1
P.6	2072-2512-01	Ring roller axis-C		1
	2072-9002-01	Screw	連動レバー軸	1
	2072-9101-01	Screw	止めねじ	2
	9384-2190-50	Double - faced tape	両面テープ	1
	9384-2590-50	Mending tape (Per roll)	メンディングテープ	1
	9611-1445-01	Phillips type screw	十字穴付なべ小ねじ	1
	9611-1625-01	Phillips type screw	十字穴付なべ小ねじ	1
	9611-1645-07	Phillips type screw	十字穴付なべ小ねじ	1
	9611-2040-04	Phillips type screw	十字穴付なべ小ねじ	6
	9612-1625-07	Phillips type screw	十字穴付なべ小ねじ	2
	9721-0120-13	E - ring	Eリング	2
	9790-1748-40	Washer	薄ワッシャー	1

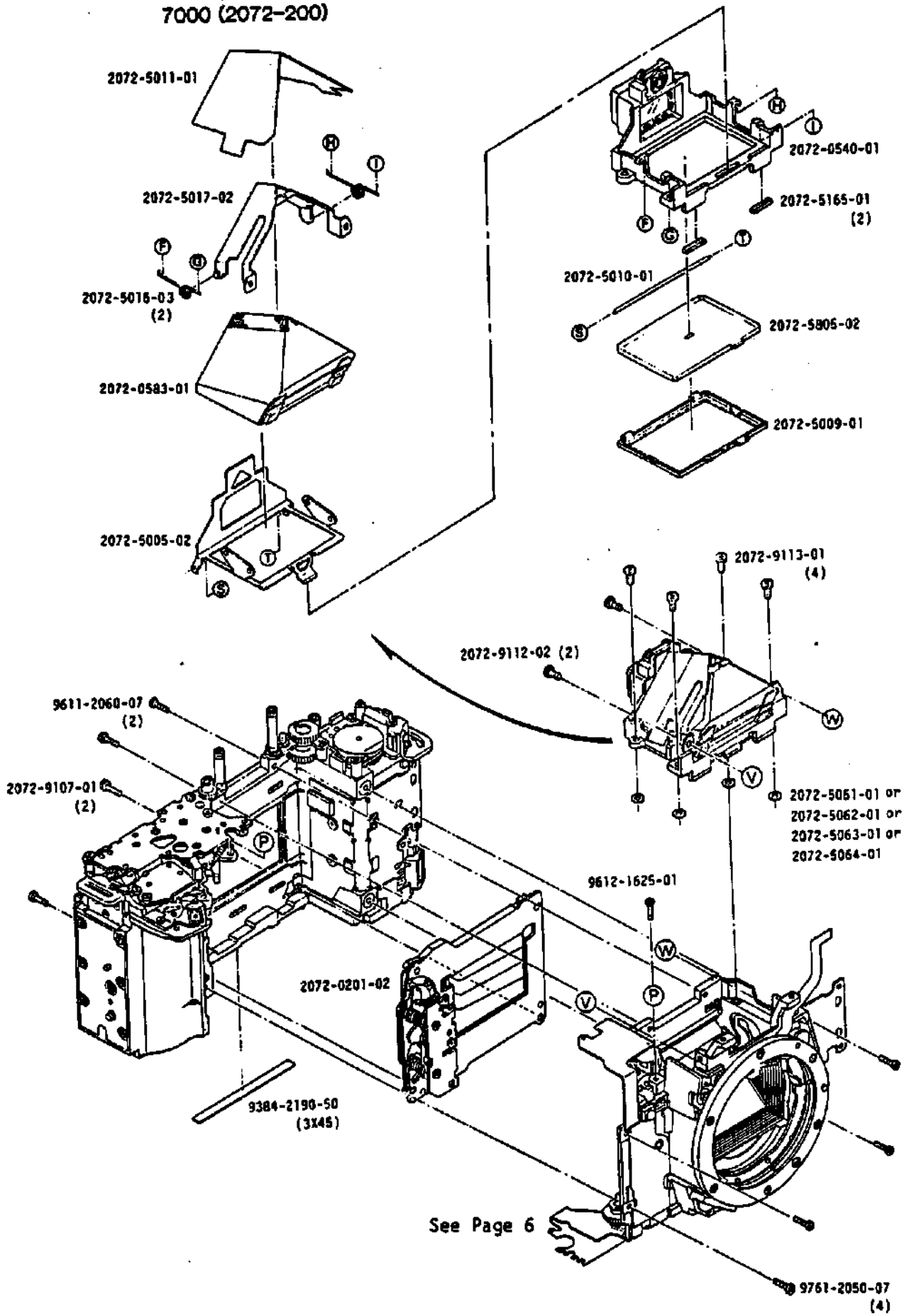
MAXXUM 7000 (2072-600)
α 7000 (2072-400)
7000 (2072-200)

Assy. Part No.2072-0500-01
Assy. Part Name Mirror box assembly



	Part No.	Part Name		Qty.
P.3	2072-0201-02,05	Shutter set	シャッターセット	1
P.2	2072-0540-01,02	Penta. holder set	ペンタホルダーセット	1
	2072-0583-01	Pentaprism set	ペンタプリズムセット	1
P.3,4	2072-1098-01	Shutter fixing spring		1
P.3,4	2072-1099-01,02	Shutter fixing axis		1
P.12	2072-4515-01	Shutter light shield sheet		1
	2072-5005-02	Viewfinder frame	視野枠	1
P.2	2072-5009-01,02	Fresnel lens holder	焦点板ホルダー	1
	2072-5010-01	Fresnel lens holder axis	焦点板ホルダー軸	1
	2072-5011-01	Isolation sheet	ペンタ絶縁シート	1
	2072-5016-03	Penta. pressure spring	ペンタ押えSP	2
	2072-5017-02	Penta. pressure plate	ペンタ押え板	1
	2072-5061-01	Washer - A (t=0.4)	間隔ワッシャーA	4
	2072-5062-01	Washer - B (t=0.3)	間隔ワッシャーB	
	2072-5063-01	Washer - C (t=0.2)	間隔ワッシャーC	
	2072-5064-01	Washer - D (t=0.1)	間隔ワッシャーD	
	2072-5165-01	Mirror cushion	ミラークッション	2
	2072-5805-02	Fresnel lens	焦点板	1
P.3	2072-9107-01	Screw	止めねじ	2
	2072-9112-02	Screw	止めねじ	2
	2072-9113-01	Screw	止めねじ	4
P.2	9384-2190-50	Double-faced tape (per roll)	両面テープ	1
	9611-2060-07	Phillips type screw	十字穴付なべ小ねじ	2
	9612-1625-01	Phillips type screw	十字穴付なべ小ねじ	1
P.3	9721-0120-13	E-ring		2
	9761-2050-07	Tap tite screw	十字穴付タップタイトねじ	4

MAXXUM 7000 (2072-600)
α 7000 (2072-400)
7000 (2072-200)



See Page 6

	Part No.	Part Name		Qty.
P.13	2072-0104-01,83	Tripod socket base plate set	三脚ねじ台板セット	1
	2072-0334-01	Rewinding gear - E set	巻戻しギヤーE台板セット	1
	2072-0427-01	Key base plate set	キー台板セット	1
	2072-0461-01	Flexible board pressure plate - A	フレキ押え板Aセット	1
	2072-1062-01	LCD1 holder	LCD1ホルダー	1
	2072-1063-01	LCD1 cover	LCD1押え	1
	2072-3084-01	Flexible board base plate	フレキ敷板	1
	2072-3308-01	Rewinding gear - C	巻戻しギヤーC	1
	2072-3309-01	Rewinding gear - D2	巻戻しギヤーD2	1
	2072-3319-01	Rewinding gear - D1	巻戻しギヤーD1	1
	2072-4203-01	Shutter speed key click plate	アップダウンキークリック	1
	2072-4205-01	Key click plate	キーSWクリックバネ	1
	2072-4245-01	LCD1	LCD1	1
	2072-4248-01	Connector	ゴムコネクター	2
	2072-4262-01	Rubber - A	フレキ押えゴムA	1
	2072-4265-01	Flexible board pressure plate - B	フレキ押え板B	1
	2072-4266-01	Rubber - B	フレキ押えゴムB	1
	2072-4267-01	LCD1 cushion	LCD1クッション	2
	2072-5077-02	Light shield plate	採光窓遮光板	1
	2072-9110-01	Screw	止めビス	2
	2072-9113-01	Screw	止めビス	2
	9384-2190-50	Double - faced tape (per roll)	両面テープ	2
P.2	9384-2391-30	Acetate tape	アセテートクロステープ	1
	9384-2590-50	Mending tape (Per roll)	メンディングテープ	2
	9611-1614-07	Phillips type screw	十字穴付なべ小ねじ	1
	9611-1616-01	Phillips type screw	十字穴付なべ小ねじ	2
	9611-1630-07	Phillips type screw	十字穴付なべ小ねじ	4
	9611-2025-07	Phillips type screw	十字穴付なべ小ねじ	2
	9761-1740-07	Tap tite screw	十字穴付タップタイトねじ	2
	9761-1745-07	Tap tite screw	十字穴付タップタイトねじ	3
	9761-2040-07	Tap tite screw	十字穴付タップタイトねじ	2
	9761-2050-07	Tap tite screw	十字穴付タップタイトねじ	1
	9762-1740-07	Tap tite screw	十字穴付タップタイトねじ	1

I N D E X

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2072-0136	2
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2072-0150	14
2072-0151	2
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2072-0154	6
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2072-0160	2
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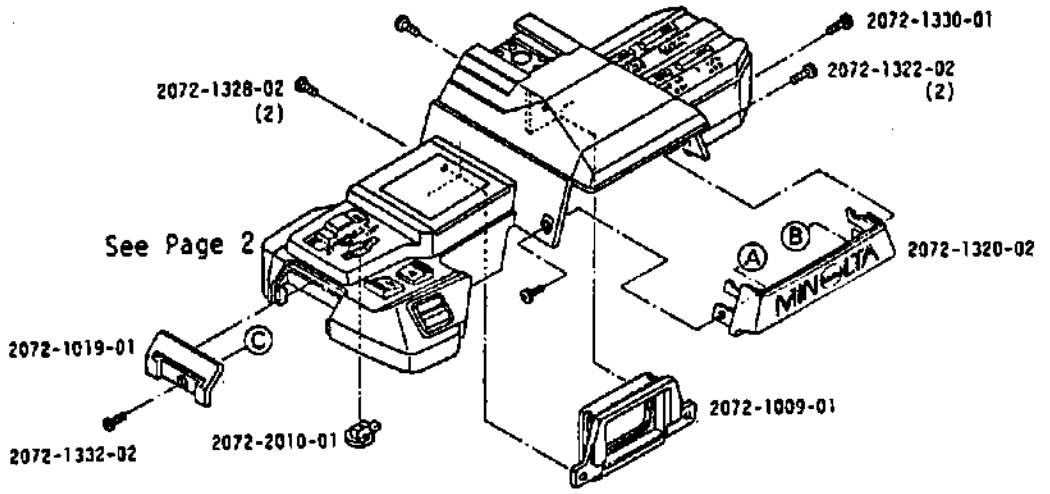

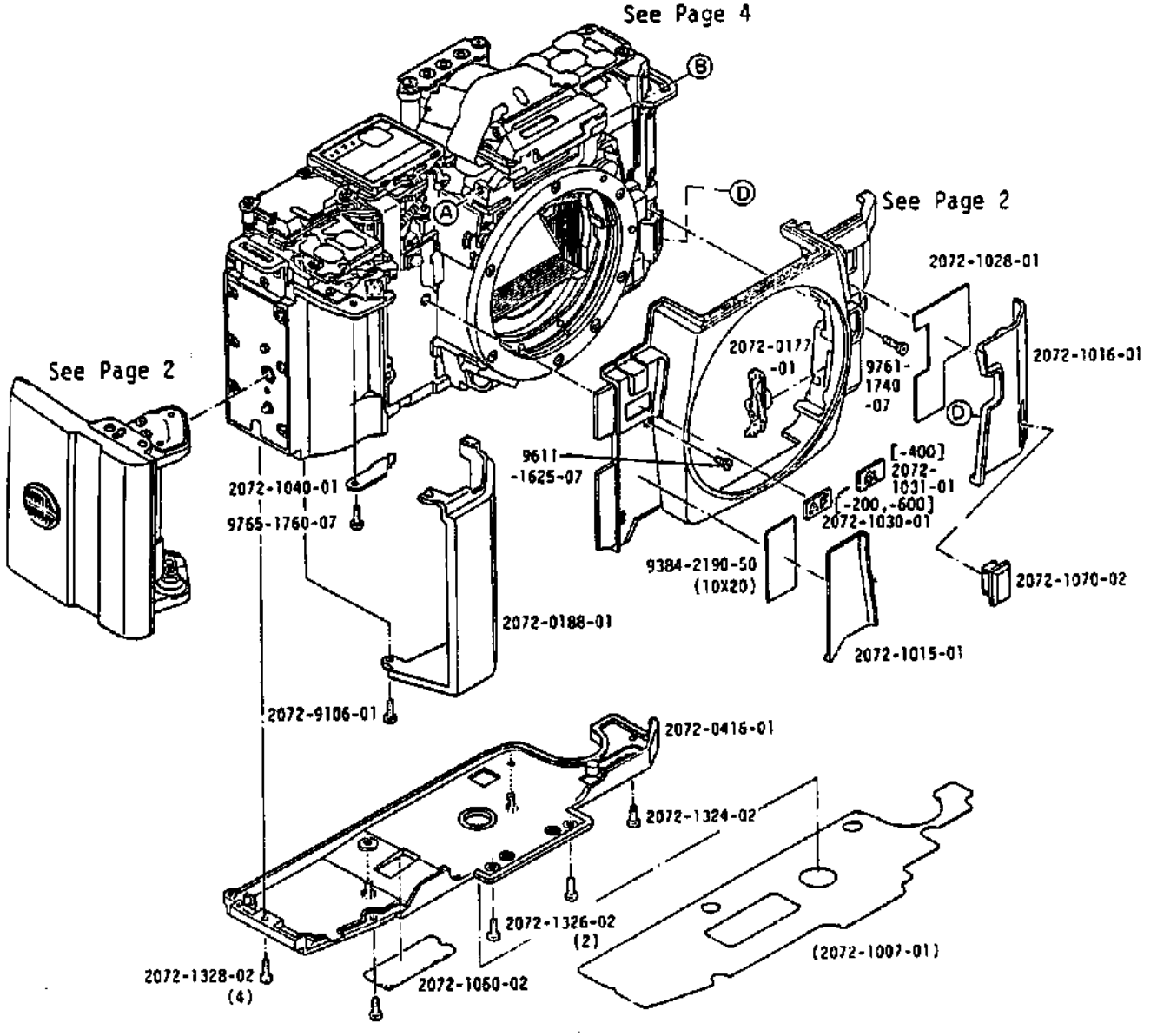

	Part No.	Part Name		Qty.
	2072-0177-01	Focus mode switch set	フォーカスモードSWセット	1
	2072-0188-01	Hand grip set	ハンドグリップセット	1
	2072-0416-01	Bottom cover set	下カバーセット	1
	(2072-1007-01)	Bottom cover sheet	下カバー保護シート	1
	2072-1009-01	Eye piece frame	接眼枠	1
	2072-1015-01	Front side cover - A	前面パネルA	1
	2072-1016-01	Front side cover - B	前面パネルB	1
	2072-1019-01	Strap eyelet cover	吊環右カバー	1
	2072-1028-01	Double - faced tape	両面テープ	1
	2072-1030-01	AF name plate (for-200,-600)	AF銘板	1
	2072-1031-01	α name plate (for-400)	α銘板	1
	2072-1040-01	Top cover set plate	上カバー引付板	1
	2072-1060-02	Serial number plate	ボディナンバー銘板	1
	2072-1070-02	Remote control terminal cap	リモコンターミナルキャップ	1
	2072-1320-02	Front top cover	上部正面カバー	1
	2072-1322-02	Screw	止めねじ	2
	2072-1324-02	Screw	止めねじ	1
	2072-1326-02	Screw	止めねじ	2
	2072-1328-02	Screw	止めねじ	6
	2072-1330-01	Screw	止めねじ	1
p.1	2072-1332-02	Screw	止めねじ	1
p.1	2072-1332-03	Screw		1
	2072-2010-01	Program reset button	プログラムリセットキー	1
	2072-9106-01	Screw	止めねじ	1
	9384-2190-50	Double - faced tape (per roll)	両面テープ	1
	9611-1625-07	Phillips type screw	十字穴付なべ小ねじ	1
	9761-1740-07	Tap tite screw	十字穴付タップタイトねじ	1
	9765-1760-07	Tap tite screw	十字穴付タップタイトねじ	1

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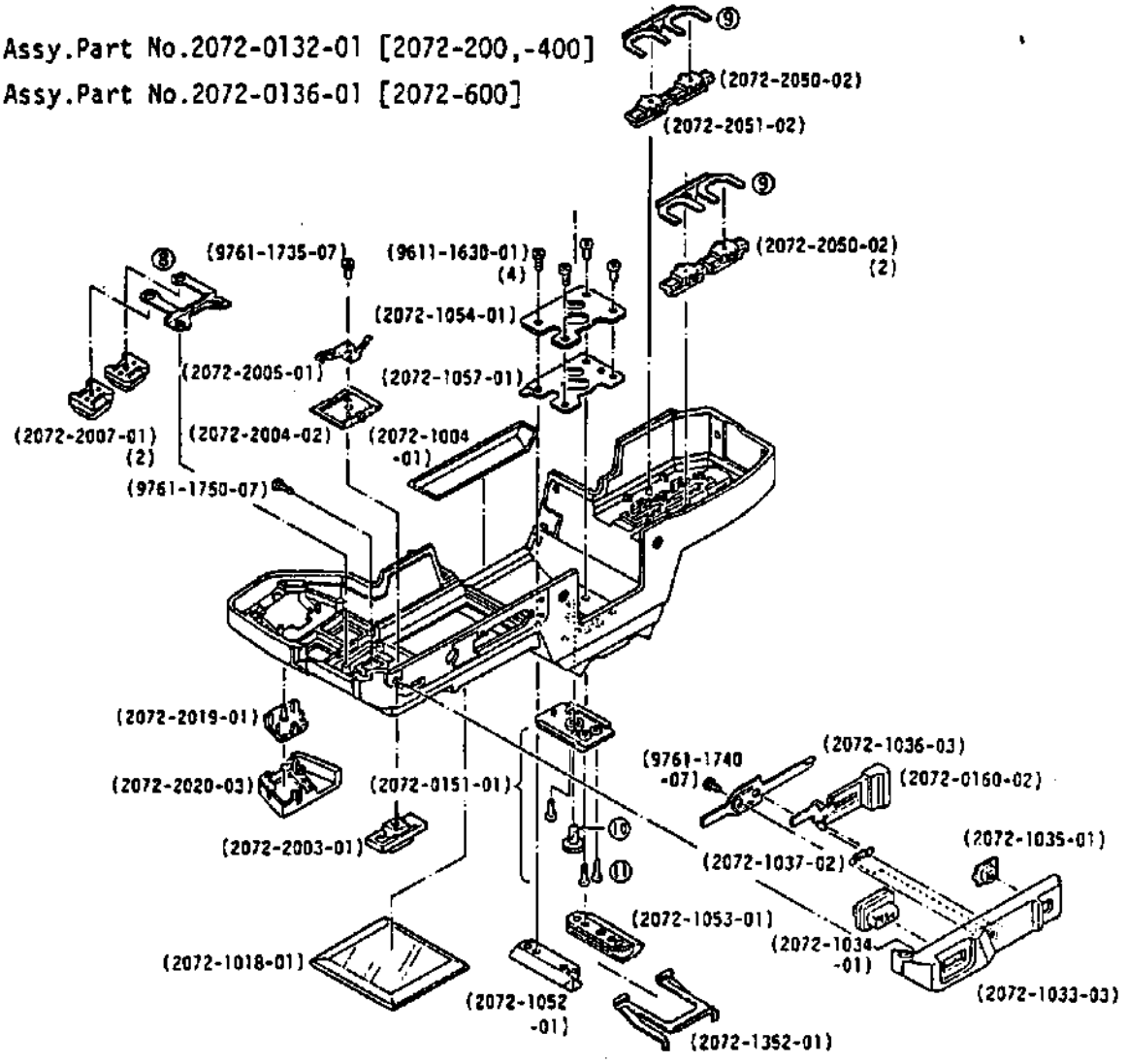
■ Parts numbered by ① to ⑪ are not for servicing. If needing part replacement, use relevant set part #0115, #0120, #0132 or #0136.

■ 下図の①～⑪は、部品供給しません。交換時は、セット品（＊0115,＊0120,＊0132又は＊0136）に交換して下さい。

Assy.Part No.2072-0132-01 [2072-200,-400]

Assy.Part No.2072-0136-01 [2072-600]



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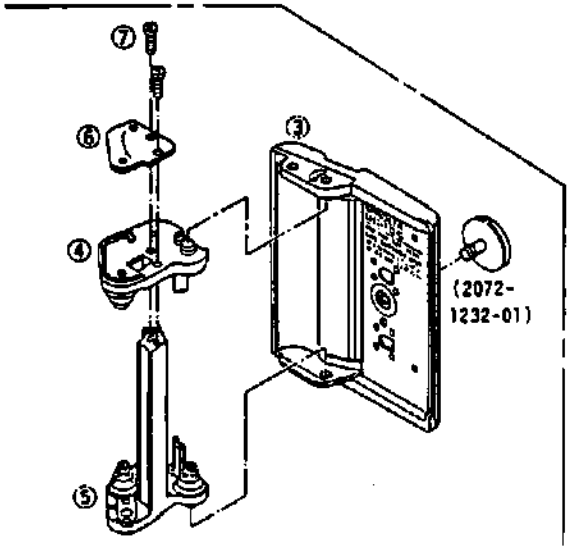
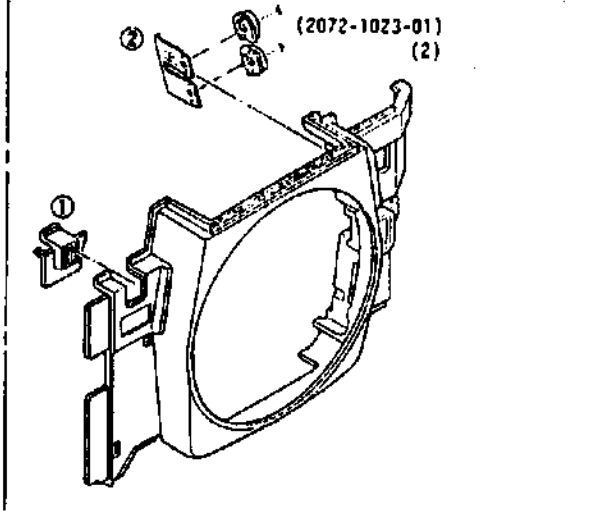


2072-0115-01



	Part No.	Part Name		Qty.
	2072-0115-01	Front cover set	前カバーセット	1
	(2072-1023-01)	Aperture key	アップダウンキー	2
(1)		Self - timer indication lamp	セルフ作動表示ランプ	1
(2)		Aperture key spring	アップダウンキーバネ	1
	2072-0120-01	Battery holder set	電池ホルダーセット	1
	(2072-1232-01)	Attaching screw	バッテリーホルダー固定ねじ	1
(3)		Battery case set	電池ケースセット	1
(4)		Battery contact - A set	電池接片Aセット	1
(5)		Battery contact - B set	電池接片Bセット	1
(6)		Battery case support plate	電池ケース補強板	1
(7)		Tap tite screw	十字穴付タップタイトねじ	2
P.1	2072-0124-01	Battery contact set		
	2072-0132-01	Top cover set (for 7000 &α7000)	上カバーセット	1
	2072-0136-01	Top cover set (for MAXXUM 7000)	上カバーセット	1
	(2072-0151-01)	Acc. shoe base plate set	アクセサリーシュー座セット	1
(9)		Contact pin - A	コンタクト接点A	1
(10)		Contact pin - B	コンタクト接点B	3
	(2072-0160-02)	Rewind switch lever set	巻戻しレバーセット	1
	(2072-1004-01)	In - finder window	正面採光板	1
P.1	(2072-1018-01)	Data window	LCD1窓	1
	(2072-1033-03)	Finger rest	上カバー指当	1
	(2072-1034-01)	AE lock button	AEロック釦	1
	(2072-1035-01)	Rewind release button	R釦	1
	(2072-1036-03)	Finger rest spring	指当SP	1
	(2072-1037-02)	Rewinding spring	巻戻しツマミSP	1
	(2072-1052-01)	Acc. shoe (Right)	アクセサリーシュー（右）	1
	(2072-1053-01)	Acc. shoe (Left)	アクセサリーシュー（左）	1
P.15	(2072-1054-01,02)	Acc. set plate	アクセサリーシュー取付板	1
P.15	(2072-1057-01)	Acc. shoe contact	アクセサリーシュー アース接片	1
	(2072-1352-01)	Acc. shoe spring	アクセサリーシューSP	1
	(2072-2003-01)	Main switch	メインSW	1
	(2072-2004-02)	Main switch click plate	メインSWツマミ押え板	1
	(2072-2005-01)	Main switch contact	メインSW接片	1
	(2072-2007-01)	Shutter speed key	アップダウンキー	2
	(2072-2019-01)	Operating button	シャッター釦	1
	(2072-2020-03)	Operating button holder	シャッター釦指当	1
	(2072-2050-02)	Control key (Blue)	コントロールキー (Blue)	3
	(2072-2051-02)	Control key (Red)	コントロールキー (Red)	1
P.1	(9611-1630-01)	Phillips type screw	十字穴付なべ小ねじ	4
	(9761-1735-07)	Tap tite screw	十字穴付タップタイトねじ	1
	(9761-1740-07)	Tap tite screw	十字穴付タップタイトねじ	1
	(9761-1750-07)	Tap tite screw	十字穴付タップタイトねじ	1
(8)		Shutter speed key spring	アップダウンキーバネ	1
(9)		Control key spring	コントロールキーバネ	2
P.1	2071-9116-01	Screw		1

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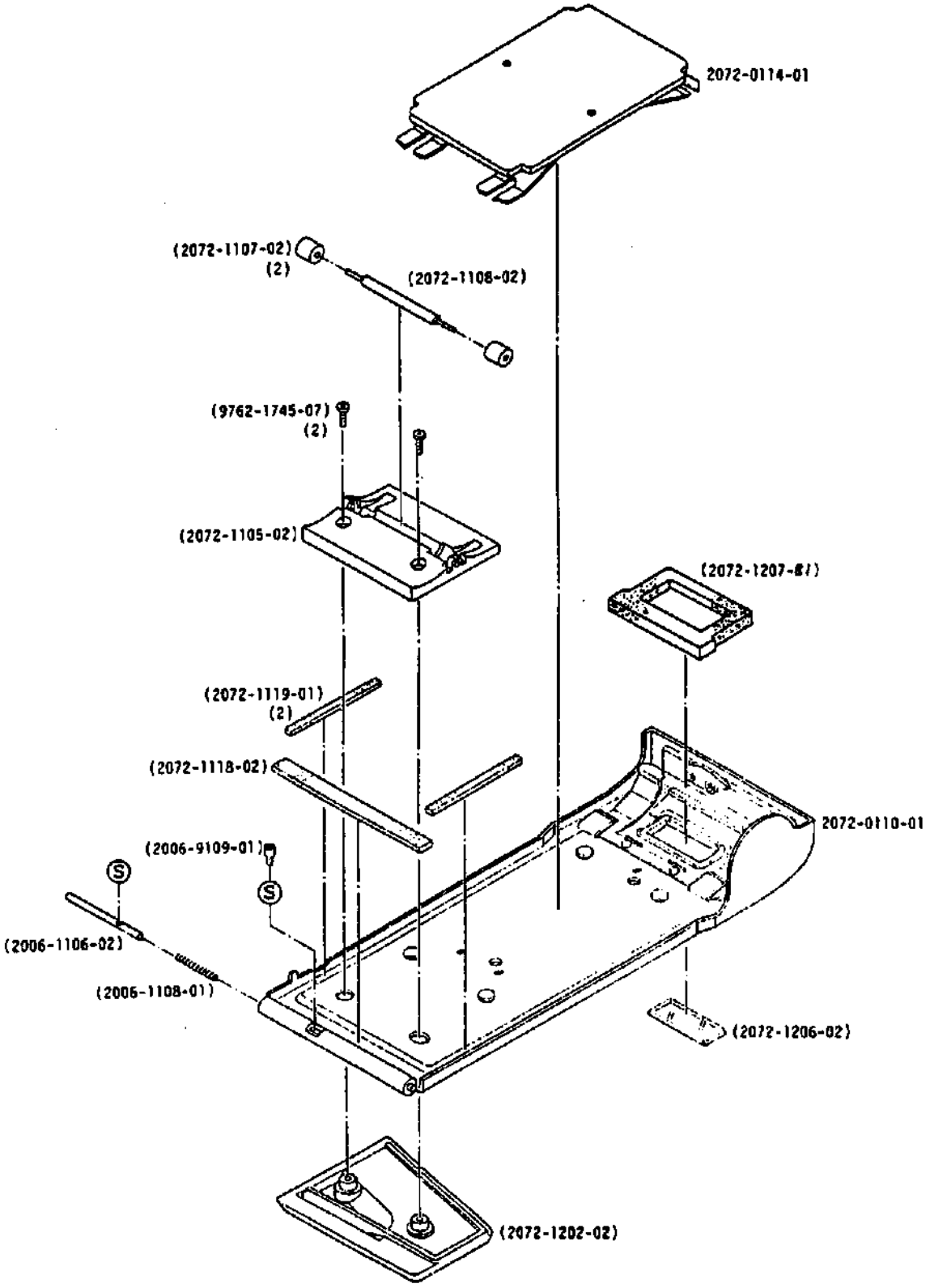

Part No.	Part Name		Qty.
2072-0110-01	Back cover set	裏蓋セット	1
(2072-1105-02)	Film guide - B	フィルムガイドB	1
(2006-1106-02)	Hinge axis - A	ヒンジ軸A	1
(2072-1107-02)	Film guide roller - B	裏蓋ローラーB	2
(2006-1108-01)	Hinge spring	ヒンジ軸スプリング	1
(2072-1108-02)	Guide roller - B axis	裏蓋ローラーB軸	1
(2072-1118-02)	Light shield sponge - A	裏蓋遮光片A	1
(2072-1119-01)	Light shield sponge - B	裏蓋遮光片B	2
(2072-1202-02)	Back grip	裏蓋グリップ	1
(2072-1206-02)	Film cartridge window	パト表示窓	1
(2072-1207-81)	Light shield sponge	パト表示窓遮光片	1
(2006-9109-01)	Hinge axis - A screw	ヒンジ軸止めビス	1
(9762-1745-07)	Tap tite screw	十字穴付タップタイトねじ	2
2072-0114-01	Pressure plate set	圧着板セット	1

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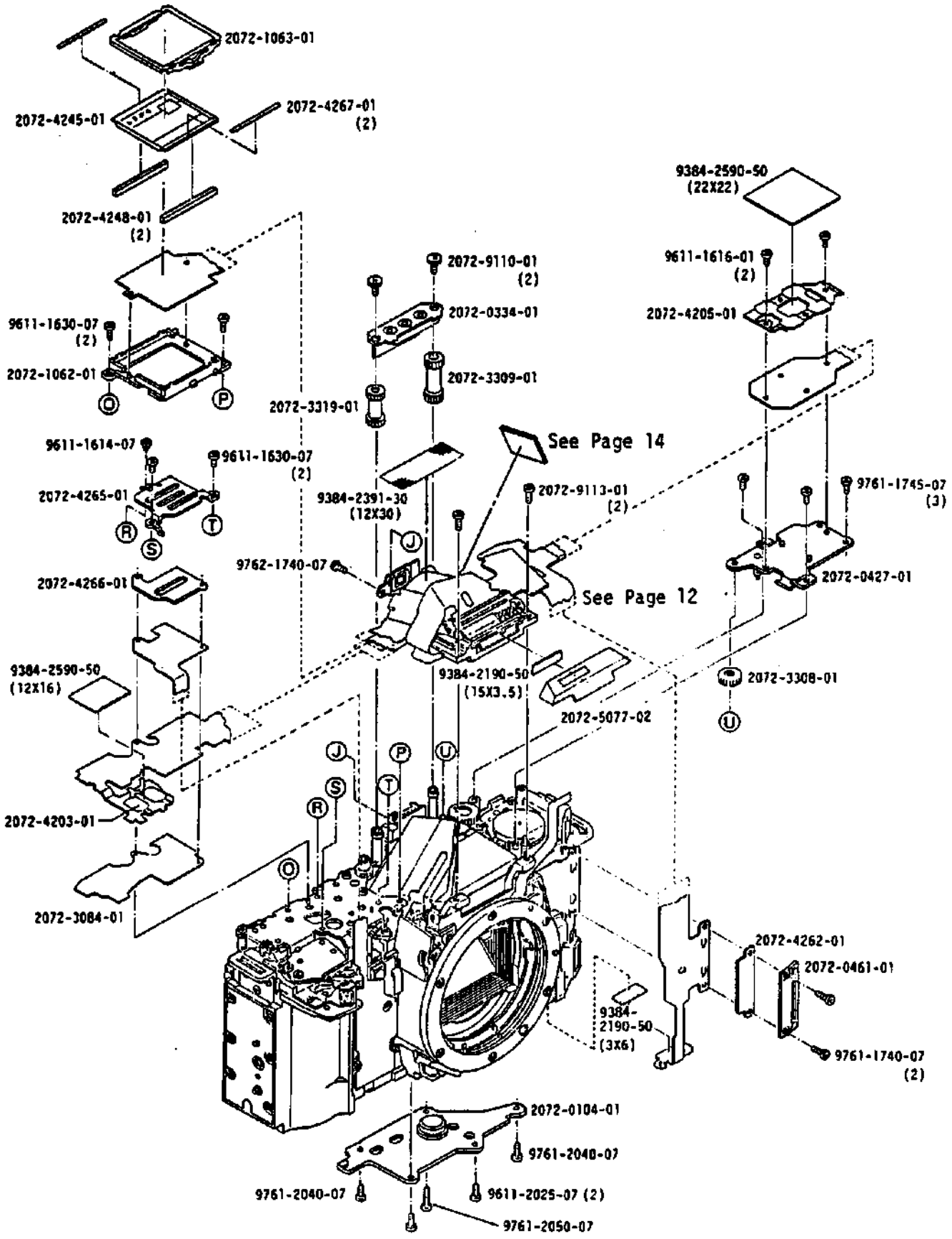
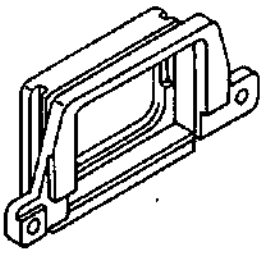
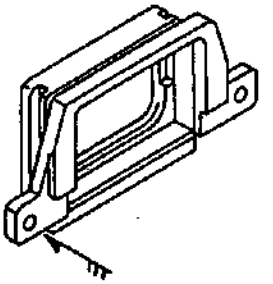
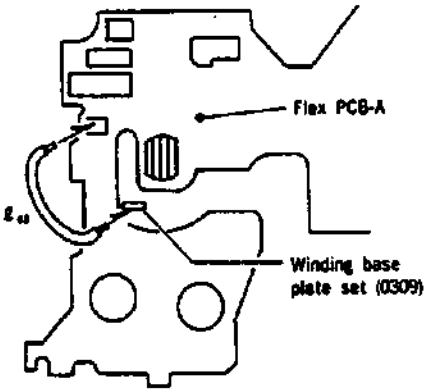
7000 (2072-200)



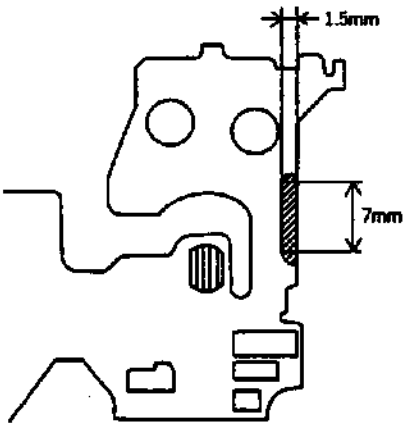
Part No.	Part Name		Qty.
2073-0309-01	Winding base plate set	巻上台板セット	1
(2073-0301-01)	Winding base plate set (Lower)	巻上台板セット（下）	1
(2073-0303-02)	Winding base plate set (Upper)	巻上台板セット（上）	1
(2073-0307-01)	Reduction gear-D set	減速ギヤーDセット	1
(2072-0317-01)	Shutter charge lever set	シャッターチャージレバーセット	1
(2073-0335-01)	Rewinding operation plate set	巻戻し切換遊星板セット	1
(2072-0370-01)	Winding stop release sector set	巻止め解除セクターセット	1
(2073-3006-01)	Reduction gear-C	減速ギヤーC	1
(2072-3010-01)	Shutter charge gear	シャッターチャージギヤー	1
(2072-3014-02)	Winding stop operation lever spring	巻止めレバーSP	1
(2072-3019-01)	Shutter charge lever spring	シャッターチャージレバーSP	1
(2072-3021-01)	Charge spring	シャッターチャージローラーSP	1
(2073-3066-01)	Diaphragm return spring	絞り復帰レバーSP	1
(2072-3068-01)	Diaphragm release lever spring	絞り復帰解除レバーSP	1
(2073-3072-01)	Drive gear	解除駆動ギヤー	1
(2072-3074-02)	Winding stop lever spring	巻止め係止解除レバーSP	1
(2072-3075-01)	Drive gear spring	係止解除駆動ギヤーSP	1
(2073-3307-01)	Rewinding gear-B	巻戻しギヤーB	1
(2072-3322-03)	Fork	巻戻し切換フォーク	1
(2072-3323-04)	Fork spring	巻戻し切換フォークSP	1
(2072-3324-03)	Rewinding operation lever spring	巻戻し操作レバーSP	1
(2072-3327-02)	Rewinding stop lever spring	巻戻し係止レバーSP	1
(2072-3329-01)	Rewinding release lever spring	巻戻し係止解除レバーSP	1
(2073-3338-01)	Rewinding operation plate spring	切換遊星板SP	1
(2072-9120-01)	Screw	止めビス	2
(2073-9277-01)	Drive gear axis	解除駆動ギヤー軸	1
(9612-1630-07)	Phillips type screw	十字穴付なべ小ねじ	1
(9721-0120-13)	E-ring	Eリング	4
(9792-1020-40)	Washer	薄ワッシャー	1

Type A	⇨	Type B
2072-1009-01 		2072-1009-03 
Not used		9391-0807-05 Lead wire ℓ_{03} (Green ℓ =20mm) 

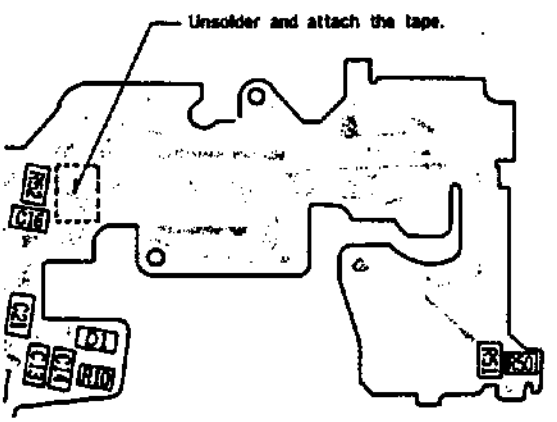
■Interchangeability

- There is no interchangeability between Type A and B except
  Type B's top cover set (2072-0132-02, 2072-0136-03)
  Type B's flexible PC board-A set (2072-0401-82)
  Type A's flexible PC board-A set (2072-0401-02) ※2
  ※2 : usable for Type B if the procedure (1) and (2) are taken

[1] Cut the slant lined portion.

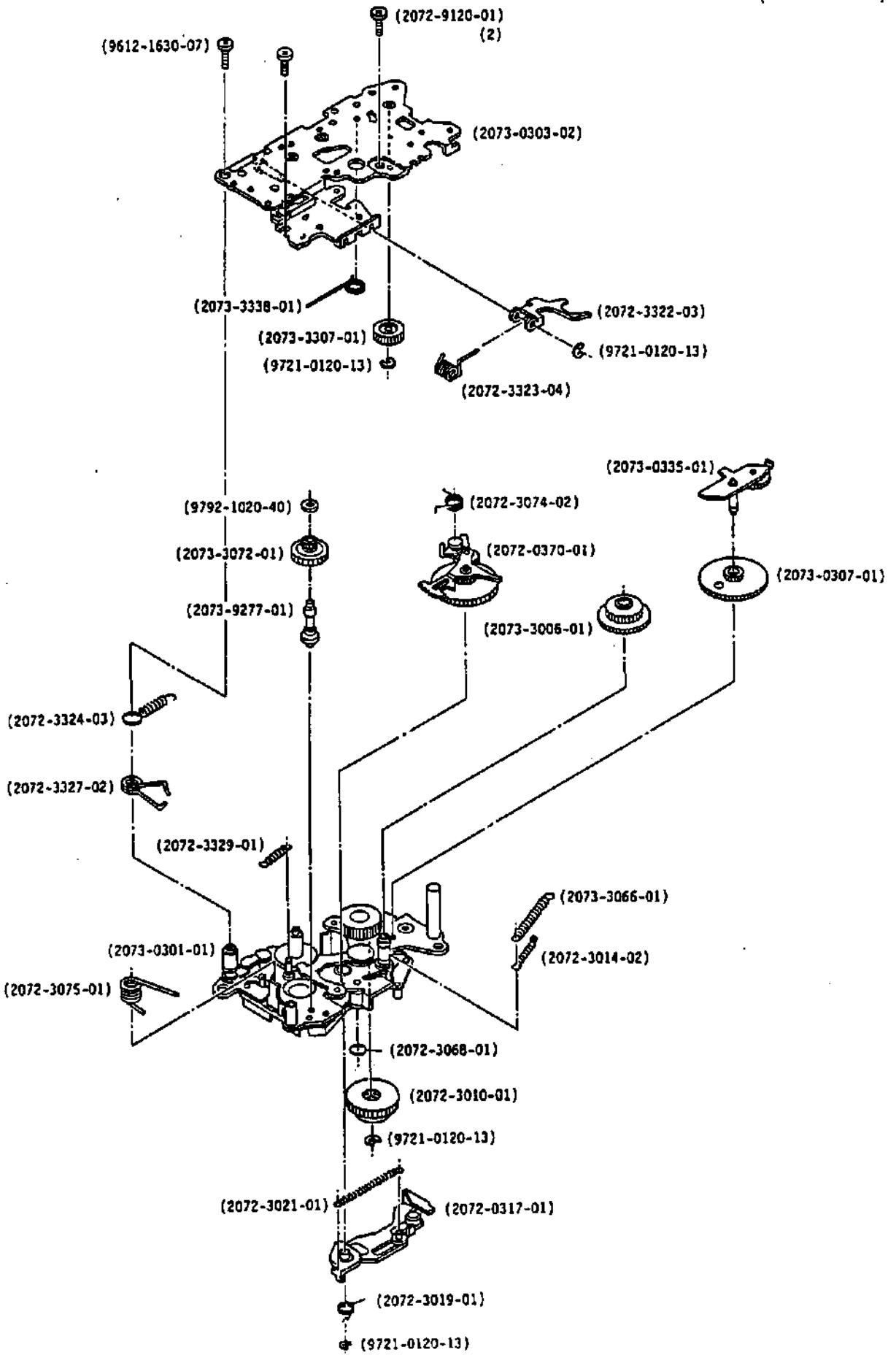


[2] Attach isolation tape.



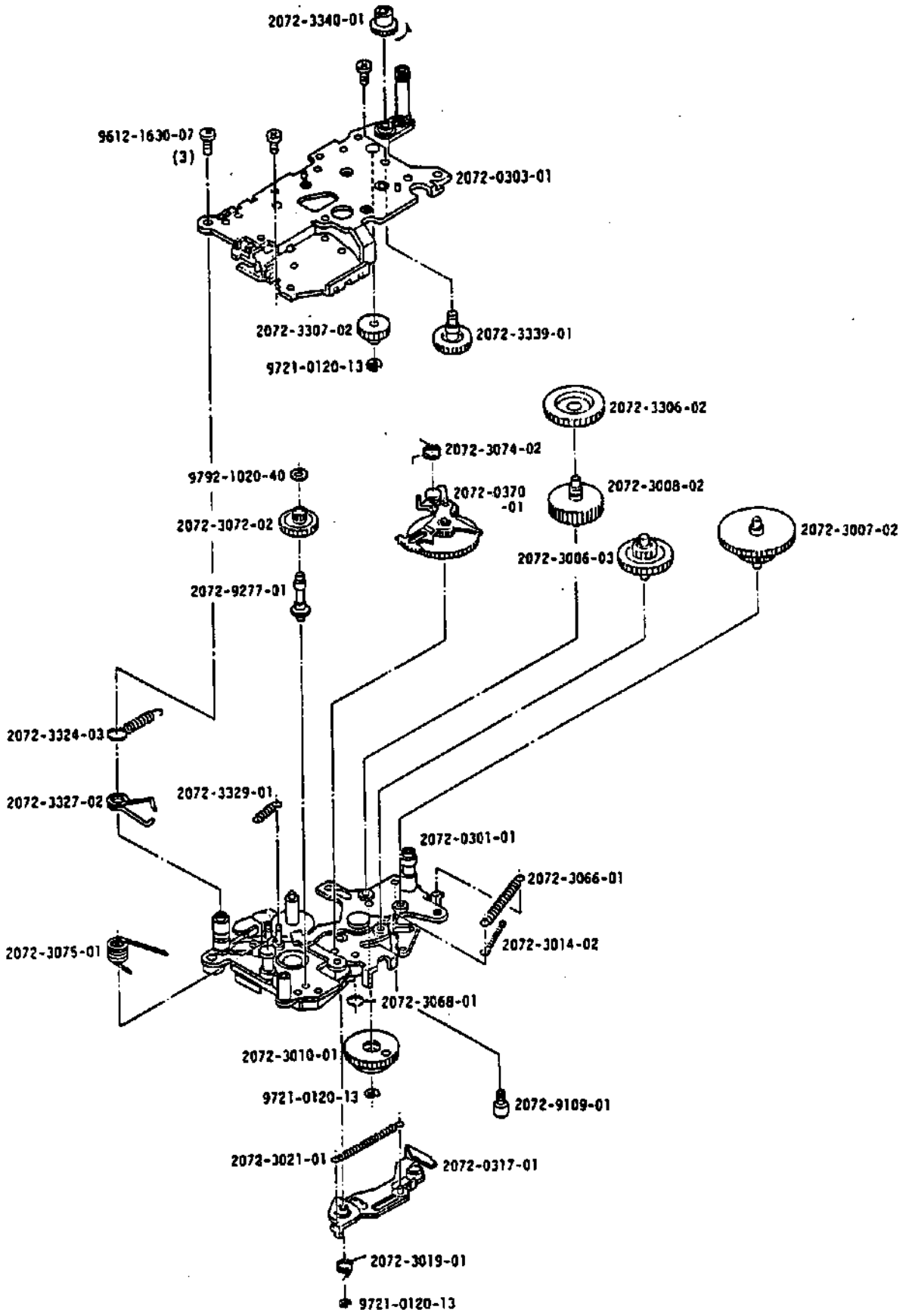
7000 (2072-200)
α7000 (2072-400)
MAXXUM 7000 (2072-600)

Assy Part No. 2073-0309-01



	Part No.	Part Name		Qty.
	2072-0140-01	Battery holder base plate set	電池ケース取付板セット	1
	2072-0248-01	Motor gear set	モーターギヤーセット	1
	2072-0254-01	Aperture chanrge base plate set	絞りチャージ台板セット	1
P.7,11	2072-0311-01,02,03	Motor contact plate set	モーター接片台セット	1
P.15	2073-0342-01	Film guide roller set	ローラーホルダーセット	1
	2072-0345-01	Spool gear set	スプールギヤーセット	1
	2072-0352-02	Sprocket axis set	スプロケット軸セット	1
	2072-0358-01	Sprocket friction set	スプロケットフリクションAセット	1
P.8	2072-0423-01,02	Release contact plate set	レリーズ基板セット	1
P.7	2072-0424-01,02	Motor set	モーターセット	1
	2072-0428-01	Plus contact plate set	電源入力⊕端子セット	1
	2072-0450-01	Converter P.C. board set	コンバーター基板セット	1
P.1	2072-1012-02,03	Strap eyelet (Right)	ストラップ取付環（右）	1
	2072-1021-02	Safe loading signal	ローディング指標	1
	2072-1044-81	Light shield sponge	保護穴遮光片	1
P.13	2072-1130-01,02	Hinge cover	ヒンジカバー	1
	2072-1131-01	Hinge (Upper)	ヒンジ（上）	1
	2072-1132-01	Hinge (Lower)	ヒンジ（下）	1
	2072-3009-03	Changeover gear	巻戻し切換ギヤー	1
	2072-3042-01	Light shield coller	遮光カラー	1
	2072-3051-01	Sprocket	スプロケット	1
	2072-3053-01	Sprocket spring	スプロケットクラッチSP	1
	2072-3403-01	Roller holder axis	ローラーホルダー軸	1
	2072-3404-02	Roller holder spring	ローラーSP	1
	2072-3405-01	Washer	ローラーホルダーワッシャー	1
	2072-3406-01	SLS screw	SLS導通ビス	1
	2072-3407-01	Film guide - A	フィルムガイドA	1
	2072-3410-01	Washer	ローラーホルダーワッシャー	1
	2072-4211-01	Cell contact plate	リチウム接片	1
	2072-4214-01	Coller	⊕端子絶縁カラー	1
	2072-9104-01	Screw	止めねじ	1
	2006-9121-01	Tapping screw	止めねじ	3
	2072-9446-01	Coller	スプロケット軸カラー	1
	2072-9447-01	Sprocket axis receiver	スプロケット軸受（下）	1
	2072-9460-81	Spacer	巻上台板スペーサー	1
P.7	2072-9461-81	Motor support coller		1
	9375-1363-01	Lithium cell	リチウム電池	1
	9761-1730-07	Tap tite screw	十字穴付タップタイトねじ	1
	9761-1735-07	Tap tite screw	十字穴付タップタイトねじ	3
	9761-1740-01	Tap tite screw	十字穴付タップタイトねじ	4
	9761-1745-07	Tap tite screw	十字穴付タップタイトねじ	1
	9761-1760-01	Tap tite screw	十字穴付タップタイトねじ	3
	9761-1780-07	Tap tite screw	十字穴付タップタイトねじ	1
	9762-1740-07	Tap tite screw	十字穴付タップタイトねじ	1
	9762-1745-07	Tap tite screw	十字穴付タップタイトねじ	3
	9762-1760-01	Tap tite screw	十字穴付タップタイトねじ	1

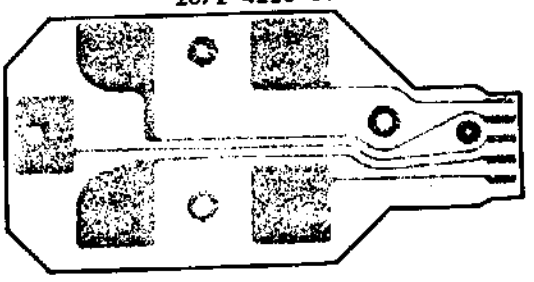
MAXXUM 7000 (2072-600)
α 7000 (2072-400)
7000 (2072-200)

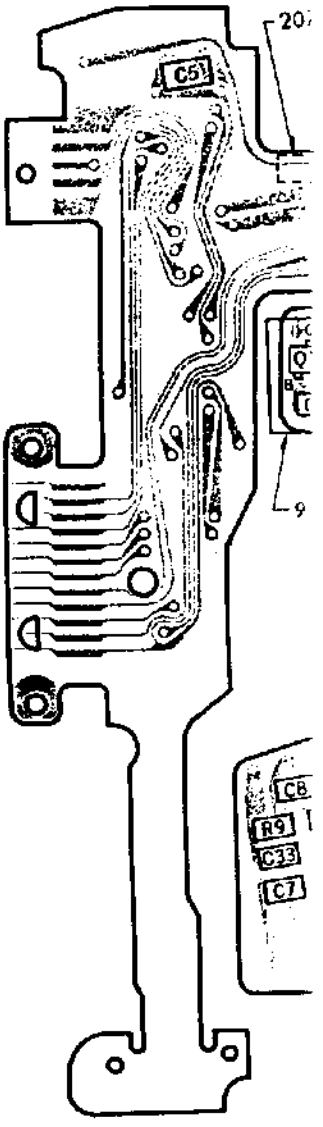


	Part No.	Part Name		Qty.
P.11	2072-0304-01	Winding base plate set (Complete)		
	2072-0301-01	Winding base plate set (Lower)	巻上台板セット（下）	1
	2072-0303-01	Winding base plate set (Upper)	巻上台板セット（上）	1
	2072-0317-01	Shutter charge lever set	シャッターチャージレバーセット	1
	2072-0370-01	Winding stop release sector set	巻止め解除セクターセット	1
	2072-3006-03	Reduction gear - C	減速ギヤーC	1
	2072-3007-02	Reduction gear - D	減速ギヤーD	1
	2072-3008-02	Reduction gear - E	減速ギヤーE	1
	2072-3010-01	Shutter charge gear	シャッターチャージギヤー	1
	2072-3014-02	Winding stop operation lever spring	巻止めレバーSP	1
	2072-3019-01	Shutter charge lever spring	シャッターチャージレバーSP	1
	2072-3021-01	Charge spring	シャッターチャージローラーSP	1
	2072-3066-01	Diaphragm return spring	絞り復帰レバーSP	1
	2072-3068-01	Diaphragm release lever spring	絞り復帰解除レバーSP	1
	2072-3072-02	Drive gear	解除駆動ギヤー	1
	2072-3074-02	Winding stop lever spring	巻止め係止解除レバーSP	1
	2072-3075-01	Drive gear spring	係止解除駆動ギヤーSP	1
	2072-3306-02	Rewinding gear - A	巻戻しギヤーA	1
	2072-3307-02	Rewinding gear - B	巻戻しギヤーB	1
	2072-3324-03	Rewinding operation lever spring	巻戻し操作レバーSP	1
	2072-3327-02	Rewinding stop lever spring	巻戻し係止レバーSP	1
	2072-3329-01	Rewinding release lever spring	巻戻し係止解除レバーSP	1
	2072-3339-01	Rewinding reduction gear - A	巻戻し減速ギヤーA	1
	2072-3340-01	Rewinding reduction gear - B	巻戻し減速ギヤーB	1
	2072-9109-01	Screw	シャッターチャージレバーストッパー	1
	2072-9277-01	Drive gear axis	解除駆動ギヤー軸	1
	9612-1630-07	Phillips type screw	十字穴付なべ小ねじ	3
	9721-0120-13	E - ring	Eリング	4
	9792-1020-40	Washer	薄ワッシャー	1

MAXUM 7000 (2072-600)
α 7000 (2072-400)
7000 (2072-200)

2072-4228-01



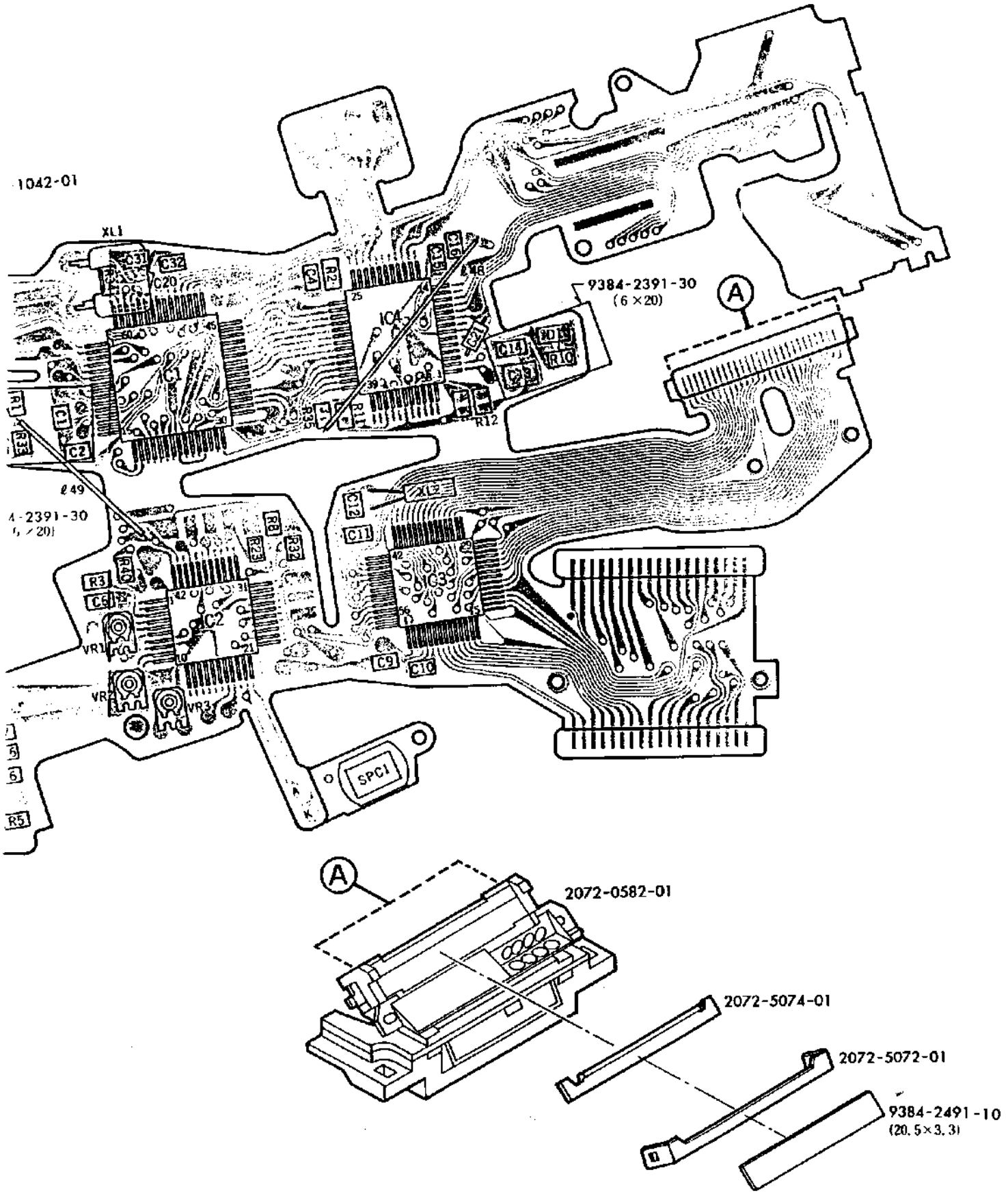


SYMBOL	PART NO.	PART NAME	TYPE	QTY
R_9	9431-6226-62	Fixed resistor	1/8W 6.2KΩ	1
	9432-6226-66		1/8W 6.2KΩ	
R_{10}, R_{51}※	9431-1036-62	Fixed resistor	1/8W 10KΩ	3
	9432-1036-66		1/8W 10KΩ	
R_{11}	9422-2746-63	Fixed resistor	1/8W 270KΩ	0～1
	9422-3346-63		1/8W 330KΩ	
	9422-4746-63		1/8W 470KΩ	
	9422-6846-63		1/8W 680KΩ	
R_{12}	9422-1036-63	Fixed resistor	1/8W 10KΩ	0～1
	9422-1536-63		1/8W 15KΩ	
	9422-2236-63		1/8W 22KΩ	
	9422-3336-63		1/8W 33KΩ	
	9422-6836-63		1/8W 68KΩ	
R_{23}, R_{32}	9431-3336-62	Fixed resistor	1/8W 33KΩ	2
	9432-3336-66		1/8W 33KΩ	
R_{33}	9431-4746-62	Fixed resistor	1/8W 470KΩ	1
	9432-4746-66		1/8W 470KΩ	
R_{34}	9431-2226-62	Fixed resistor	1/8W 2.2KΩ	1
	9432-2226-66		1/8W 2.2KΩ	
R_{41}※	9431-1056-62	Fixed resistor	1/8W 1MΩ	1
	9432-1056-66		1/8W 1MΩ	
VR_1	9472-1039-63	Variable resistor	1/8W 10KΩ	1
	9473-1039-63		1/8W 10KΩ	
VR_2, VR_3	9472-2239-63	Variable resistor	1/8W 22KΩ	2
	9473-2239-63		1/8W 10KΩ	
C_1, C_2	9565-2215-37	Condenser	(Ceramic) 220PF/50V	2
C_3, C_{16}, C_{26}※	9564-3335-69	Condenser	(Ceramic) 0.033μF/25V	3
	9564-3335-65		(Ceramic) 0.033μF/25V	
C_4, C_6, C_7	9564-1035-69	Condenser	(Ceramic) 0.01μF/25V	3
	9565-1035-37		(Ceramic) 0.01μF/50V	
C_5	9531-1555-68	Condenser	(Tantalum) 1.5μF/6.3V	1
	9532-1555-67		(Tantalum) 1.5μF/10V	
	9532-1555-68		(Tantalum) 1.5μF/10V	
C_8, C_{13}	9564-3325-69	Condenser	(Ceramic) 3300PF/25V	2
	9565-3325-37		(Ceramic) 3300PF/50V	
C_9, C_{10}, C_{22}, C_{24}	9564-1048-61	Condenser	(Ceramic) 0.1μF/25V	4
	9563-1048-61		(Ceramic) 0.1μF/15V	
C_{11}, C_{12}	9564-2204-65	Condenser	(Ceramic) 22PF/25V	2
	9565-2204-65		(Ceramic) 22PF/50V	
C_{13}	9564-1044-64	Condenser	(Ceramic) 0.1μF/25V	1
C_{14}	9564-3935-68	Condenser	(Ceramic) 0.039μF/25V	1
	9565-3935-63		(Ceramic) 0.039μF/50V	
C_{21}	9564-1535-37	Condenser	(Ceramic) 0.015μF/25V	1
	9565-1535-69		(Ceramic) 0.015μF/50V	
C_{31}, C_{32}	9564-3304-65	Condenser	(Ceramic) 33PF/25V	2
	9565-3304-65		(Ceramic) 33PF/50V	
C_{36}※	9564-2215-68	Condenser	(Ceramic) 220PF/25V	1
	9565-2215-63		(Ceramic) 220PF/50V	
C_{39}※	9564-1025-69	Condenser	(Ceramic) 1000PF/25V	1
	9565-1025-37		(Ceramic) 1000PF/50V	
SPC_1	2072-4292-01	SPC		1
R_{52}※	9431-1026-62	Fixed resister	1/16W 1KΩ	1
	9432-1026-66		1/10W 1KΩ	

P.17 2072-~~0402~~ 0401-02 Flexible P.C. board A set

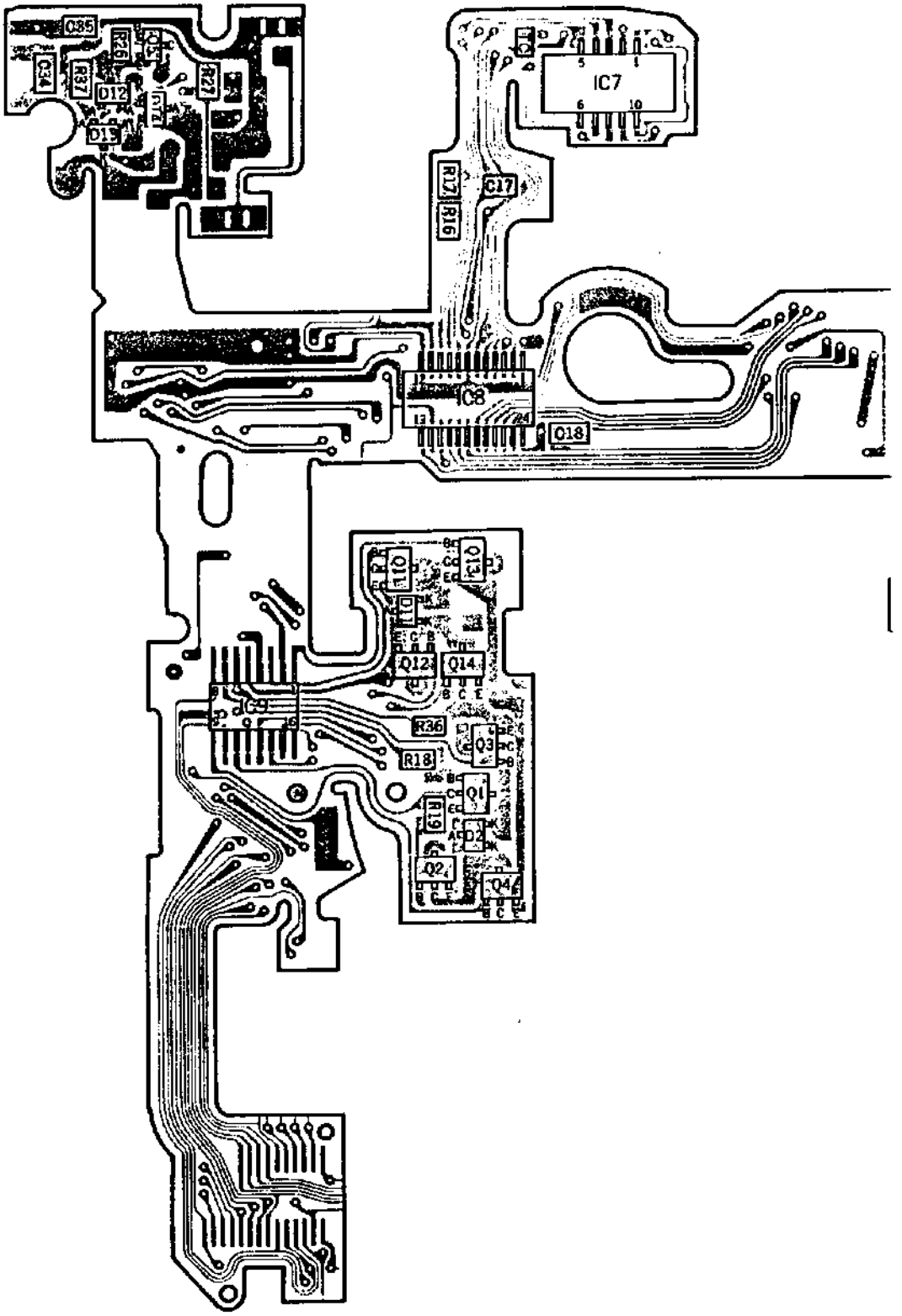
- ※ shows exclusive part for 2072-0401-02, -81. (C_{20} is not installed in 2072-0401-81)
- The others than ※ marked parts are common to 2072-0401-01.
- ※印の部品は2072-0401-02、-81専用を示します(但しC_{20}は2072-0401-81には含まれません)。
- ※印以外の部品は2072-0401-01と共通です。

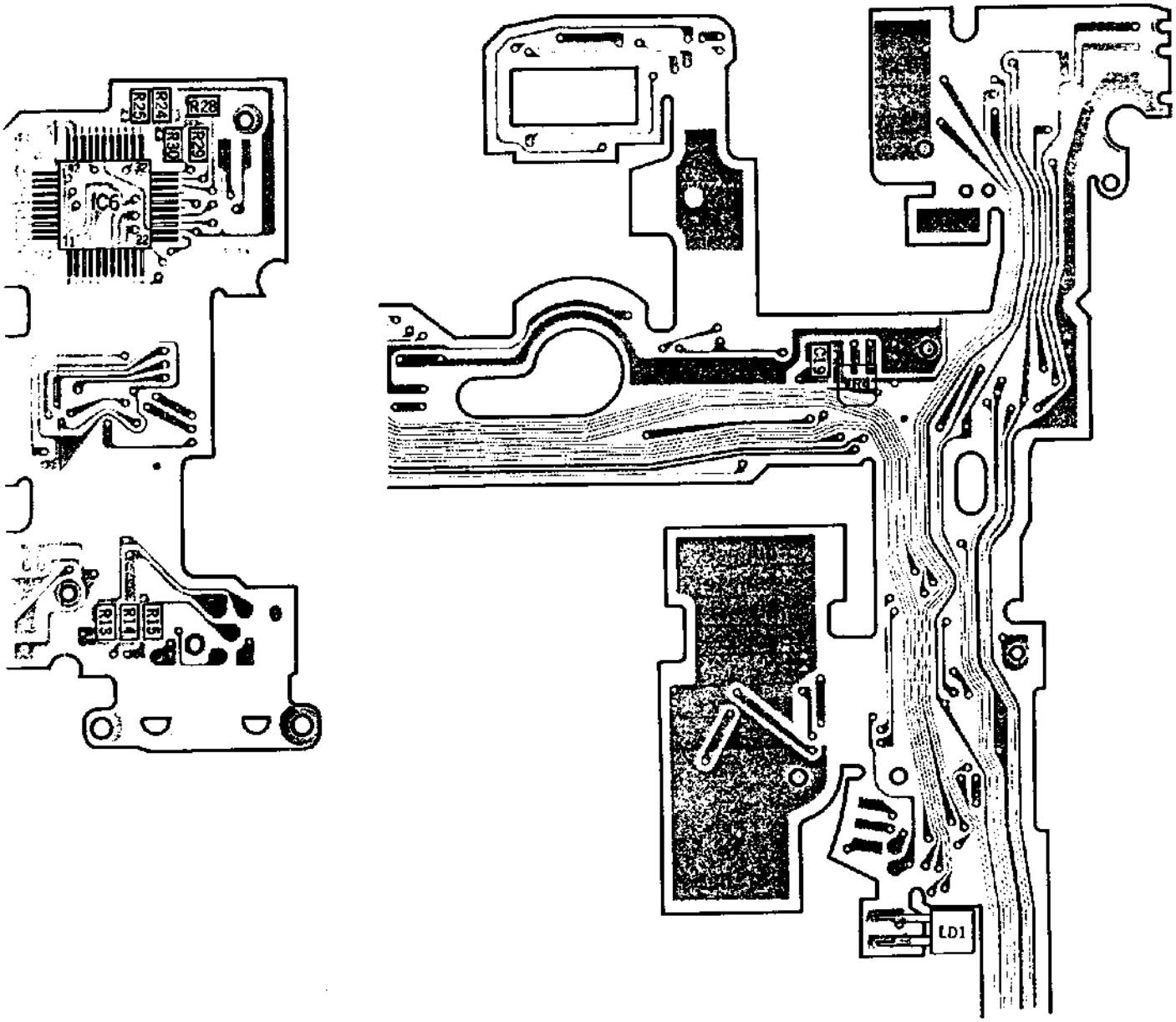
SYMBOL	PART NO.	PART NAME	TYPE	QTY
Q_{10}, Q_{11}※	9362-1461-01	Transistor	MITSUBISHI 2SC3052	2
	9362-1461-02		MITSUBISHI 2SC3052	
	9362-1461-03		MITSUBISHI 2SC3052	
	9362-1633-01		NEC 2SC1623	
	9362-1633-02		NEC 2SC1623	
	9362-1633-03		NEC 2SC1623	
	9362-1633-04		NEC 2SC1623	
	9362-1032-01		TOSHIBA 2SC2712	
	9362-1032-02		TOSHIBA 2SC2712	
	9362-1032-03		TOSHIBA 2SC2712	
	9362-1032-04		TOSHIBA 2SC2712	
	9362-1464-01		ROHM 2SC2412K	
	9362-1464-02		ROHM 2SC2412K	
	9362-1464-03		ROHM 2SC2412K	
D_1	9361-1461-03	Diode	ROHM RLS-73	1
XL_1	9373-4361-01	Crystal resonator	CSA 4.19MG1	1
P.8 XL_2	9373-4161-01	Crystal resonator	KF-38G	1
	9373-4162-01		C-2-32.7	
	9373-4163-01		DT-26S	
	9373-4163-02		DT-26S	
R_1	9431-3346-62	Fixed resistor	1/16W 330KΩ	1
	9432-3346-66		1/16W 330KΩ	
R_2	9432-1068-61	Fixed resistor	1/4W 10MΩ	1
	9432-2068-61		1/4W 20MΩ	
P.14 R_3, R_{50}※	9431-1056-62	Fixed resistor	1/16W 1MΩ	2
	9432-1056-66		1/16W 1MΩ	
R_4	9431-2036-62	Fixed resistor	1/16W 20KΩ	1
	9432-2036-66		1/16W 20KΩ	
	9431-2436-62		1/16W 24KΩ	
	9432-2436-66		1/16W 24KΩ	
	9431-3036-62		1/16W 30KΩ	
	9432-3036-66		1/16W 30KΩ	
R_5	9422-2236-63	Fixed resistor	1/16W 22KΩ	0~1
	9422-2436-63		1/16W 24KΩ	
	9422-2736-63		1/16W 27KΩ	
	9422-3336-63		1/16W 33KΩ	
	9422-3936-63		1/16W 39KΩ	
	9422-5136-63		1/16W 51KΩ	
	9422-6836-63		1/16W 68KΩ	
	9422-1046-63		1/16W 100KΩ	
	9422-2046-63		1/16W 200KΩ	
R_6	9431-2246-62	Fixed resistor	1/16W 100KΩ	1
	9432-2246-66		1/16W 100KΩ	
R_7	9431-6826-62	Fixed resistor	1/16W 6.8KΩ	1
	9432-6826-66		1/16W 6.8KΩ	
R_8	9431-1546-62	Fixed resistor	1/16W 150KΩ	1
	9432-1546-66		1/16W 150KΩ	
	9431-1846-62		1/16W 180KΩ	
	9432-1846-66		1/16W 180KΩ	
	9431-2246-62		1/16W 220KΩ	
	9432-2246-66		1/16W 220KΩ	


1042-01
XL1
C31
C32
C20
IC4
IC1
R1
C1
R33
C2
R35
R11
R12
C14
R10
9384-2391-30
(6×20)
A
ℓ49
4-2391-30
6, ×20)
R8
R23
R32
R3
C8
C12
C11
IC3
C2
VR1
VR2
VR3
C9
C10
SPC1
R5
2072-0582-01
2072-5074-01
2072-5072-01
9384-2491-10
(20.5×3.3)

	Part No.	Part Name	Qty.
	2072-0582-01	In-finder set	1
P.8	(2072-5073-01,81)	Infinder pressure-C	1
P.8	(2072-5813-04)	Infinder mirror-A	1
P.8	(2072-5814-03)	Infinder mirror-B	1
	2072-1042-01	Body light sponge-B	1
	2072-4228-01	Flexible plate-H	1
P.8	2072-4246-01	LCD 2	1
	2072-4270-81	Connector	1
	2072-5072-01	In-finder pressure-B	1
	2072-5074-01	In-finder pressure-A	1
P.3	2072-5078-04	LCD light shield	1
P.8,9	2072-5815-01,02	In-finder prism	1
	9384-2391-30	Acetate tape	1
P.9	9384-2491-10	Vinyl tape	1
P.16	2072-4511-01	Spacer	1

MAXXUM 7000 (2072–600)
α 7000 (2072–400)
7000 (2072–200)



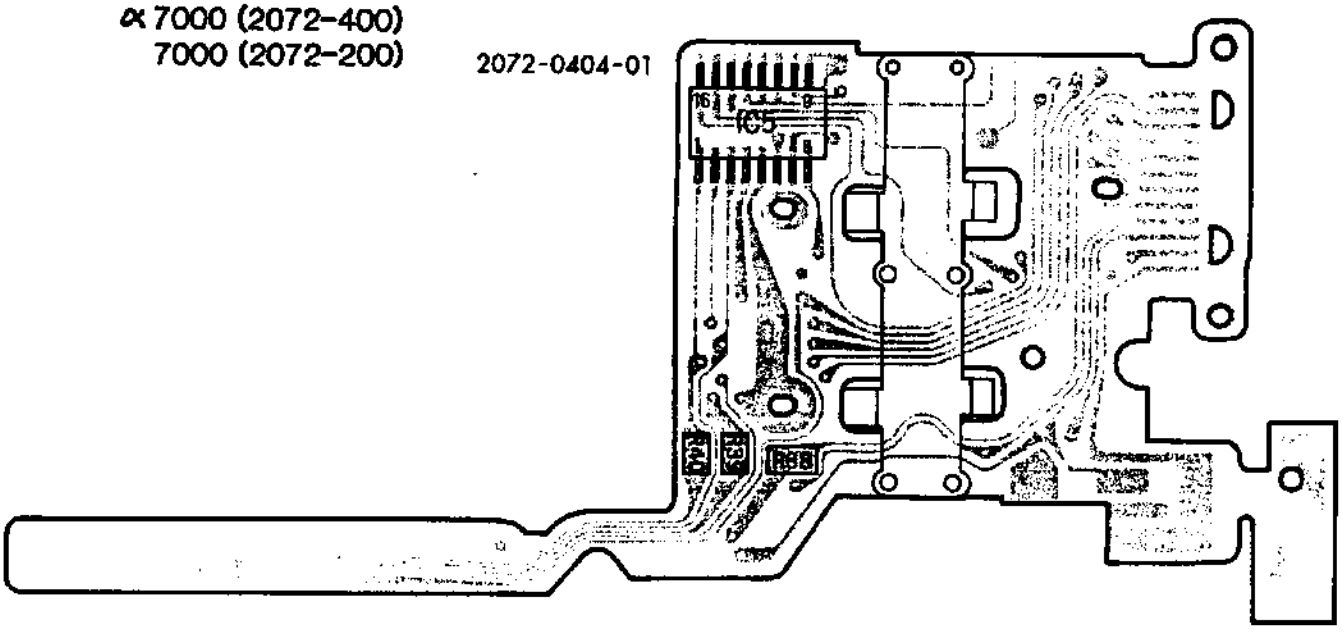

IC6
R23
R24
R26
R30
R29
R13
R14
R15
LD1

P.12 2072-0402-02 Flexible P.C. board-B set

	Symbol	Part No.	Part Name (Maker, Type)	Qty.
	LD1	9353-2361-01	LED(LN25CP)	1
	D14	9361-1462-01	Diode(MATSUSHITA,MA151WA)	1
		9361-1463-01	Diode(SANYO,DCA015)	
	D12,D13	9361-1364-04	Diode(TOSHIBA,1SS182)	2
		9361-1364-05	Diode(TOSHIBA,1SS183)	
		9361-1364-06	Diode(TOSHIBA,1SS184)	
	Q1,Q2,Q11,Q12	9362-2361-02	Transistor(TOSHIBA,2SC2982)	4
		9362-2361-03	Transistor(TOSHIBA,2SC2982)	
		9362-2361-04	Transistor(TOSHIBA,2SC2982)	
		9362-2461-01	Transistor(SANYO,2SD1620)	
		9362-2462-01	Transistor(MATSUSHITA,2SD1119)	
		9362-2462-02	Transistor(MATSUSHITA,2SD1119)	
		9362-2462-03	Transistor(MATSUSHITA,2SD1119)	
	Q3,Q4,Q13,Q14	9363-1463-02	Transistor(SANYO,2SB1120)	4
		9363-1463-03	Transistor(SANYO,2SB1120)	
		9363-1464-02	Transistor(MATSUSHITA,2SB1073)	
		9363-1464-03	Transistor(MATSUSHITA,2SB1073)	
		9363-2361-02	Transistor(TOSHIBA,2SA1314)	
		9363-2361-03	Transistor(TOSHIBA,2SA1314)	
	Q5	9363-1033-01	Transistor(SANYO,2SA1179)	1
		9363-1033-02	Transistor(SANYO,2SA1179)	
		9363-1033-03	Transistor(SANYO,2SA1179)	
		9363-1033-04	Transistor(SANYO,2SA1179)	
		9363-1363-01	Transistor(TOSHIBA,2SA1298)	
		9363-1363-02	Transistor(TOSHIBA,2SA1298)	
		9363-1461-01	Transistor(NEC,2SB736)	
		9363-1461-02	Transistor(NEC,2SB736)	
		9363-1461-03	Transistor(NEC,2SB736)	
		9363-1461-04	Transistor(NEC,2SB736)	
		9363-1461-05	Transistor(NEC,2SB736)	
P.9	R13,R15	9431-1826-62	Fixed resistor(1/16W, 1.8KΩ)	2
P.9	R14	9431-1026-62	Fixed resistor(1/16W, 1KΩ)	1
	R18,R19	9432-1016-65	Fixed resistor(1/8W, 100Ω)	2
	R26	9431-3336-62	Fixed resistor(1/16W, 33KΩ)	1
	R27	9431-2226-62	Fixed resistor(1/16W, 2.2KΩ)	1
	VR4	9472-3339-64	Variable resistor(1/8W, 33KΩ)	1
P.10	IC9	2072-4309-01	IC (M51052P)	1
P.10,17	D16,D17※	9361-1631-11	Diode (NEC IS953)	1

MAXXUM 7000 (2072-600)
α 7000 (2072-400)
7000 (2072-200)

2072-0404-01



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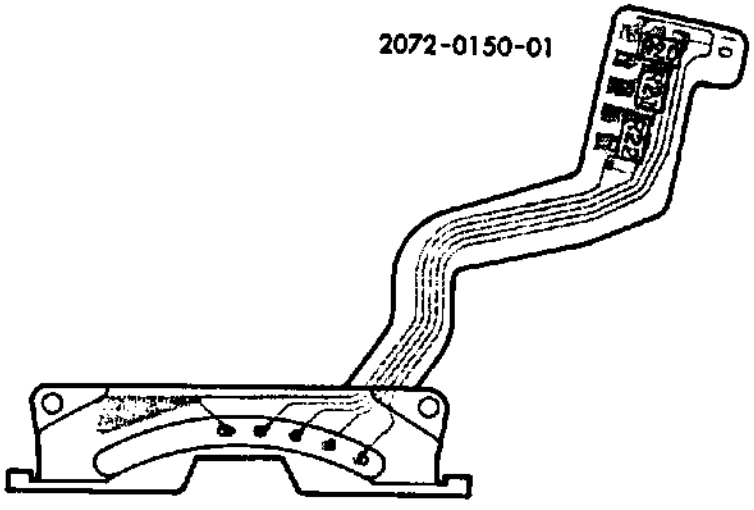

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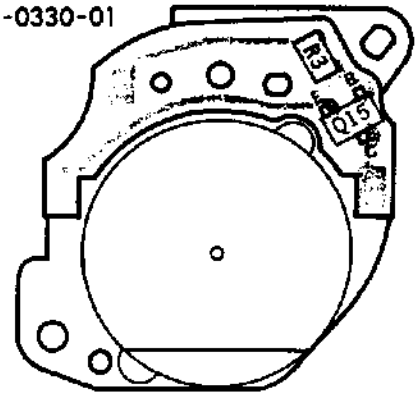

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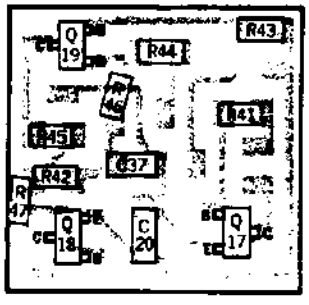


P.17 2071-0150-01 BL contact holder set

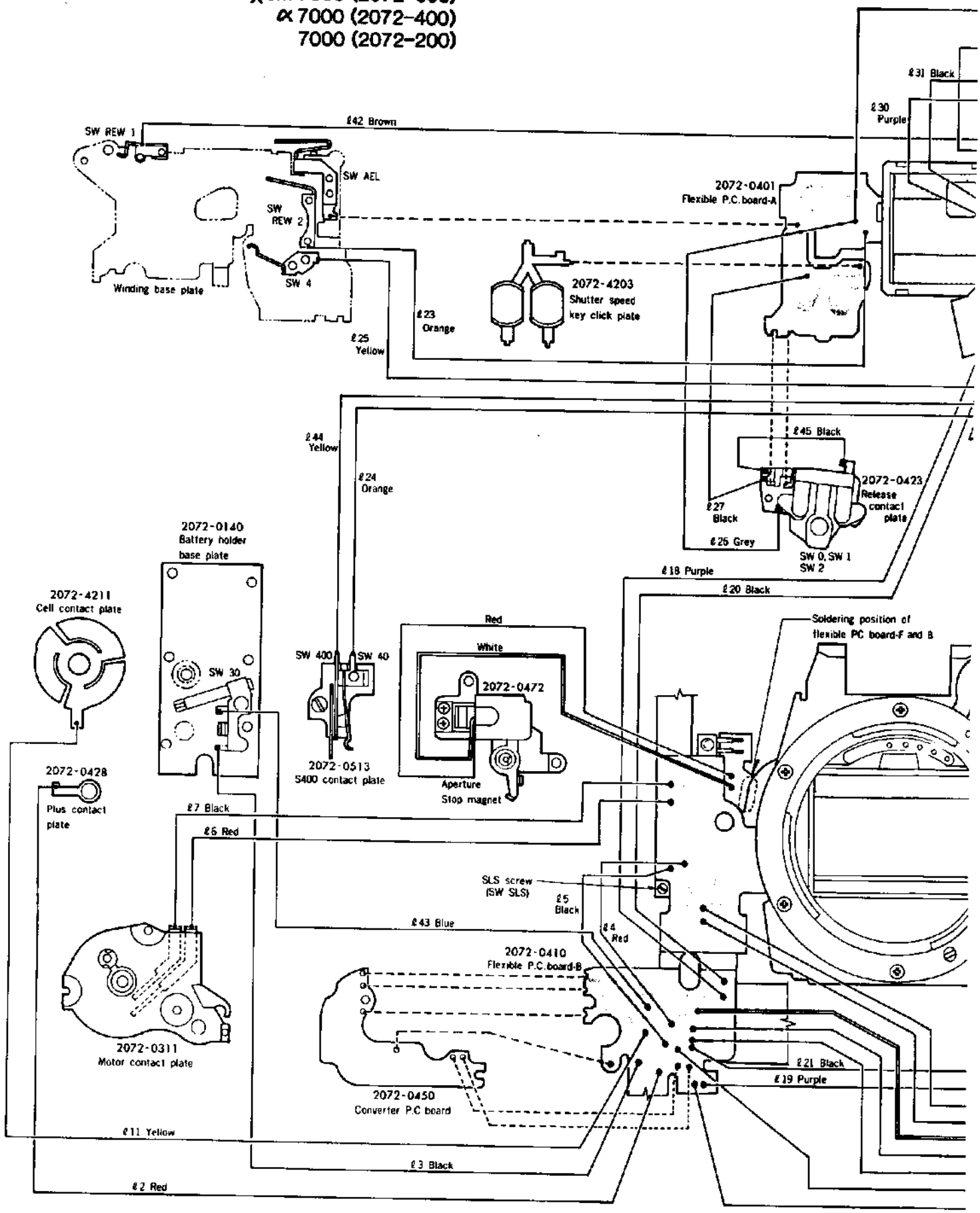
Symbol	Part No.	Part Name (Maker, Type)	Qty.
R20	9431-3316-62	Fixed resistor(1/16W, 330Ω)	1
R21	9431-1026-62	Fixed resistor(1/16W, 1KΩ)	1
R22	9431-1016-62	Fixed resistor(1/16W, 100Ω)	1

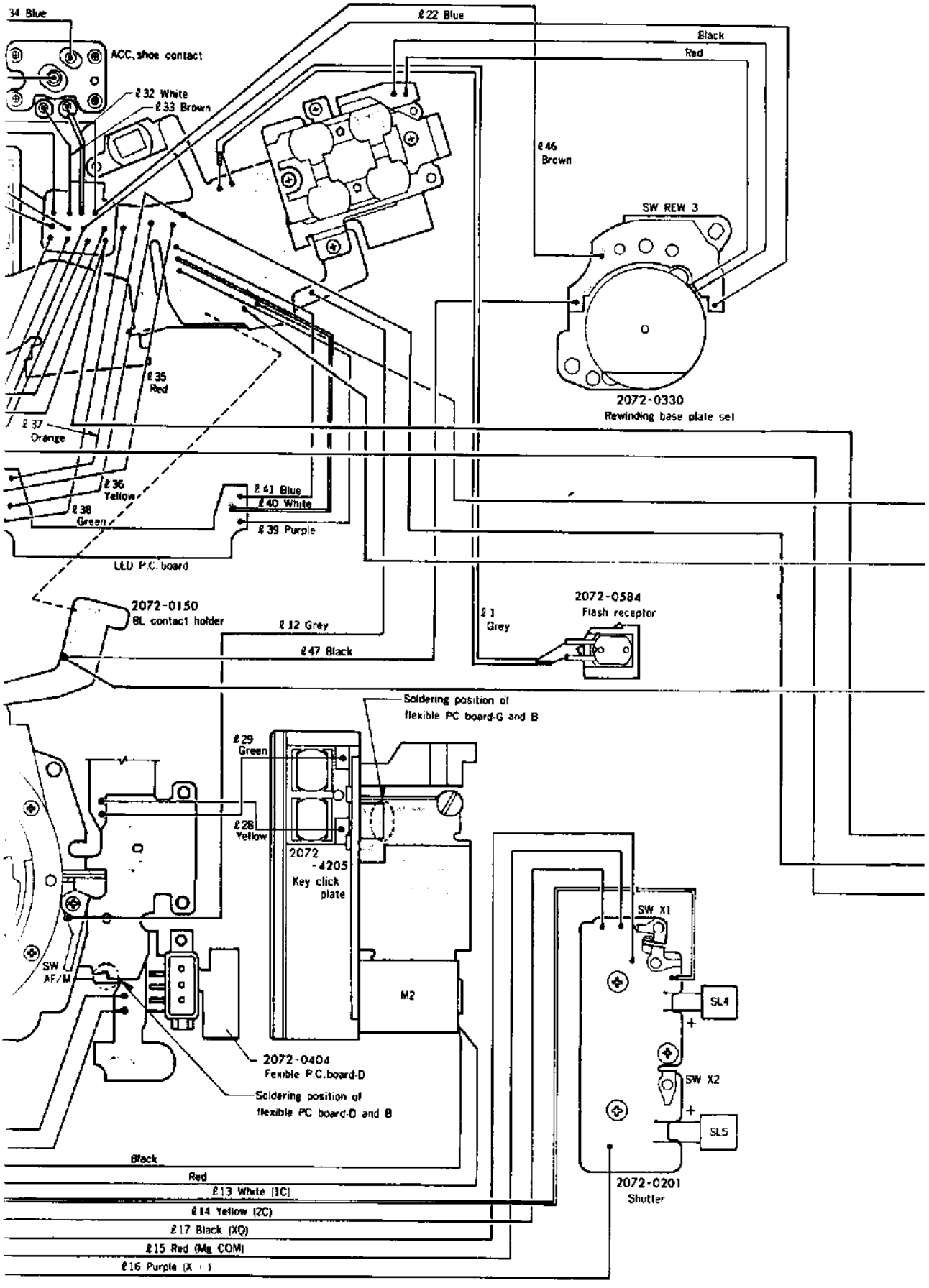
Part No.	Part Name		Qty.
2072-0330-01	Rewinding base plate set(Left)	巻戻し台板セット (左)	1
2072-0404-01	Flexible P.C. board-D set	フレキシブル基板Dセット	1
2072-0451-01	P.C. board-C set	C基板セット	1

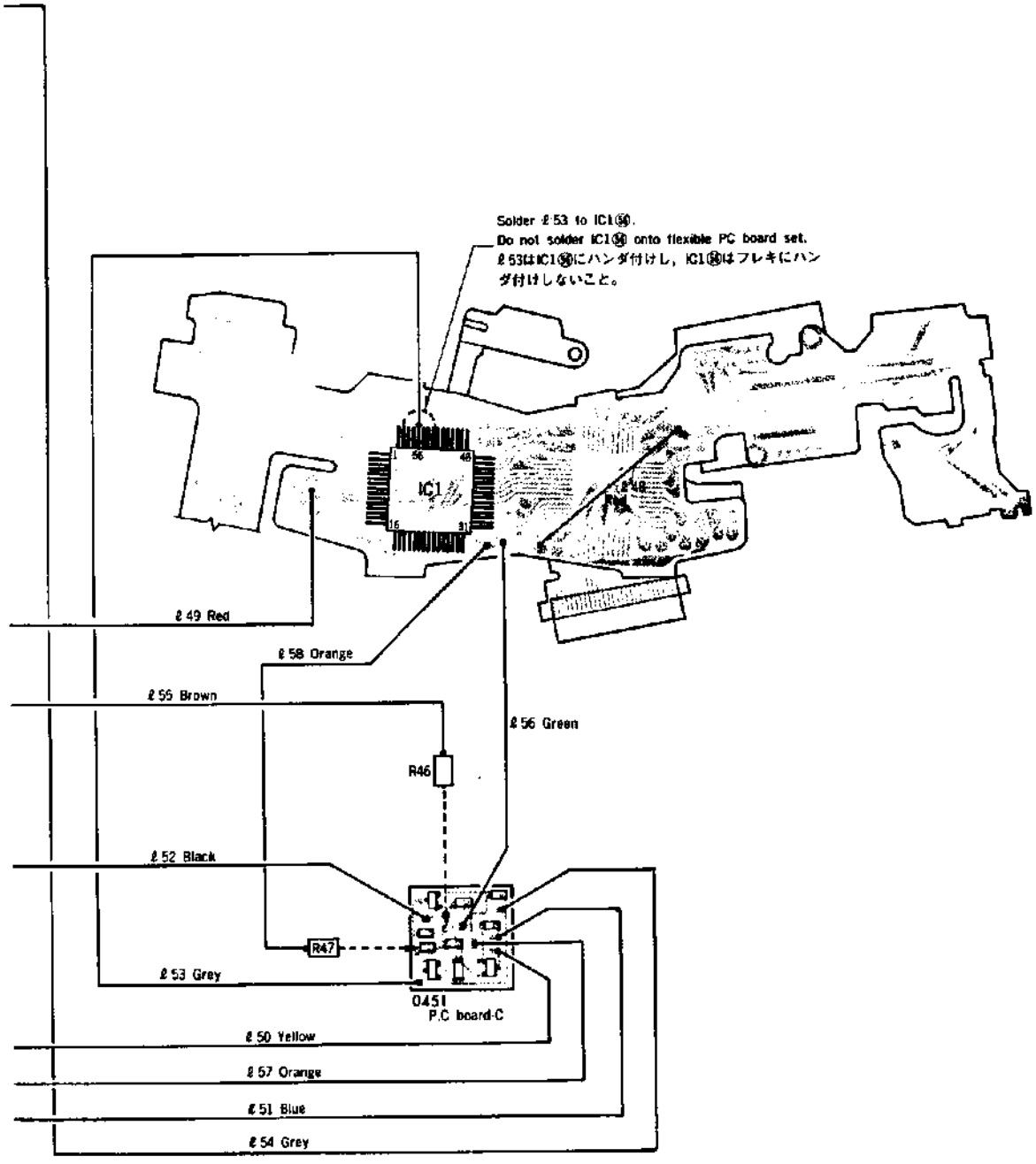
Lead wires list

Symbol	Part No.	Color	Type		Qty.
ℓ1	2072-4401-02	Grey	Shield wire	ℓ=110	1
ℓ2, ℓ4	9391-1207-02	Red	φ0.12/7	ℓ=50	2
ℓ3	9391-1207-00	Black	φ0.12/7	ℓ=50	1
ℓ5, ℓ7	9391-1207-00	Black	φ0.12/7	ℓ=45	2
ℓ6	9391-1207-02	Red	φ0.12/7	ℓ=40	1
ℓ11, ℓ14	9391-0807-04	Yellow	φ0.08/7	ℓ=65	2
ℓ53, ℓ26, ℓ12	9391-0807-08	Grey	φ0.08/7	ℓ=55	3
ℓ13	9391-0807-09	White	φ0.08/7	ℓ=65	1
ℓ15	9391-0807-02	Red	φ0.08/7	ℓ=65	1
ℓ16	9391-0807-07	Purple	φ0.08/7	ℓ=35	1
ℓ17	9391-0807-00	Black	φ0.08/7	ℓ=60	1
ℓ18, ℓ19	9391-0807-07	Purple	φ0.08/7	ℓ=110	2
ℓ20, ℓ21	9391-0807-00	Black	φ0.08/7	ℓ=110	2
ℓ22	9391-0807-06	Blue	φ0.08/7	ℓ=85	1
ℓ23	9391-0807-03	Orange	φ0.08/7	ℓ=45	1
ℓ58, ℓ24	9391-0807-03	Orange	φ0.08/7	ℓ=35	2
ℓ25	9391-0807-04	Yellow	φ0.08/7	ℓ=100	1
ℓ27	9391-0807-00	Black	φ0.08/7	ℓ=30	1
ℓ28	9391-0807-04	Yellow	φ0.08/7	ℓ=20	1
ℓ29	9391-0807-05	Green	φ0.08/7	ℓ=20	1
ℓ30	9391-0807-07	Purple	φ0.08/7	ℓ=65	1
ℓ31	9391-0807-00	Black	φ0.08/7	ℓ=70	1
ℓ32	9391-0807-09	White	φ0.08/7	ℓ=60	1
ℓ42, ℓ33	9391-0807-01	Brown	φ0.08/7	ℓ=60	2
ℓ34	9391-0807-06	Blue	φ0.08/7	ℓ=65	1
ℓ49 ℓ35, ℓ48	9391-0807-02	Red	φ0.08/7	ℓ=40	3
ℓ36, ℓ44	9391-0807-04	Yellow	φ0.08/7	ℓ=40	2
ℓ37	9391-0807-03	Orange	φ0.08/7	ℓ=40	1
ℓ38	9391-0807-05	Green	φ0.08/7	ℓ=35	1
ℓ39	9391-0807-07	Purple	φ0.08/7	ℓ=30	1
ℓ40	9391-0807-09	White	φ0.08/7	ℓ=30	1
ℓ51, ℓ41	9391-0807-06	Blue	φ0.08/7	ℓ=30	2
ℓ43	9391-0807-04	Blue	φ0.08/7	ℓ=50	1
ℓ52, ℓ45	9391-0807-00	Black	φ0.08/7	ℓ=20	2
ℓ46	9391-0807-03	Brown	φ0.08/7	ℓ=80	1
ℓ47	9391-0807-00	Black	φ0.08/7	ℓ=45	1
ℓ50	9391-0807-04	Yellow	φ0.08/7	ℓ=25	1
ℓ54	9391-0807-08	Grey	φ0.08/7	ℓ=100	1
ℓ55	9391-0807-01	Brown	φ0.08/7	ℓ=20	1
ℓ56	9391-0807-05	Green	φ0.08/7	ℓ=30	1
ℓ57	9391-0807-03	Orange	φ0.08/7	ℓ=20	1
p.8 ℓ60	9391-0807-01	Brown	φ0.08/7	ℓ=20	1
p.10 ℓ63	9391-0807-02	Red	φ0.08/7	ℓ=20	1
p.8 R51	9422-1036-63	Fixed resistor (1/8W, 10KΩ)			1

MAXXUM 7000 (2072-600)
α 7000 (2072-400)
7000 (2072-200)




34 Blue
ACC. shoe contact
ℓ32 White
ℓ33 Brown
ℓ22 Blue
Black
Red
ℓ46 Brown
SW REW 3
2072-0330
Rewinding base plate set
ℓ35 Red
ℓ37 Orange
ℓ36 Yellow
ℓ38 Green
ℓ41 Blue
ℓ40 White
ℓ39 Purple
LED P.C. board
2072-0150
8L contact holder
ℓ42 Grey
ℓ47 Black
ℓ1 Grey
2072-0584
Flash receptor
Soldering position of flexible PC board-G and B
ℓ29 Green
ℓ28 Yellow
2072-4205
Key click plate
SW AF/M
M2
SW X1
SL4
SW X2
SL5
2072-0404
Flexible P.C. board-D
Soldering position of flexible PC board-D and B
2072-0201
Shutter
Black
Red
ℓ13 White (1C)
ℓ14 Yellow (2C)
ℓ17 Black (XQ)
ℓ15 Red (Mg COM)
ℓ16 Purple (X)


Solder ℓ53 to IC1㊿.
Do not solder IC1㊾ onto flexible PC board set.
ℓ53はIC1㊿にハンダ付けし，IC1㊾はフレキにハンダ付けしないこと。
IC1
ℓ49 Red
ℓ58 Orange
ℓ55 Brown
ℓ56 Green
R46
ℓ52 Black
R47
ℓ53 Grey
0451
P.C board-C
ℓ50 Yellow
ℓ57 Orange
ℓ51 Blue
ℓ54 Grey

REPAIR

■ The contents of this manual are mainly related to the assembly and adjustment procedures for the 2072.

■ Since the procedures mentioned in this manual are for assembly they should be followed in reverse for disassembly.

■ Description of symbols

[G] : Grease used & part greased
[O] : Oil used & part oiled
[B] : Adhesive used & part adhered
[T] : Tool used & tool number

■ Assembly and adjustment procedures

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■ Precautions

■The following precautions must be taken concerning all plastic parts.

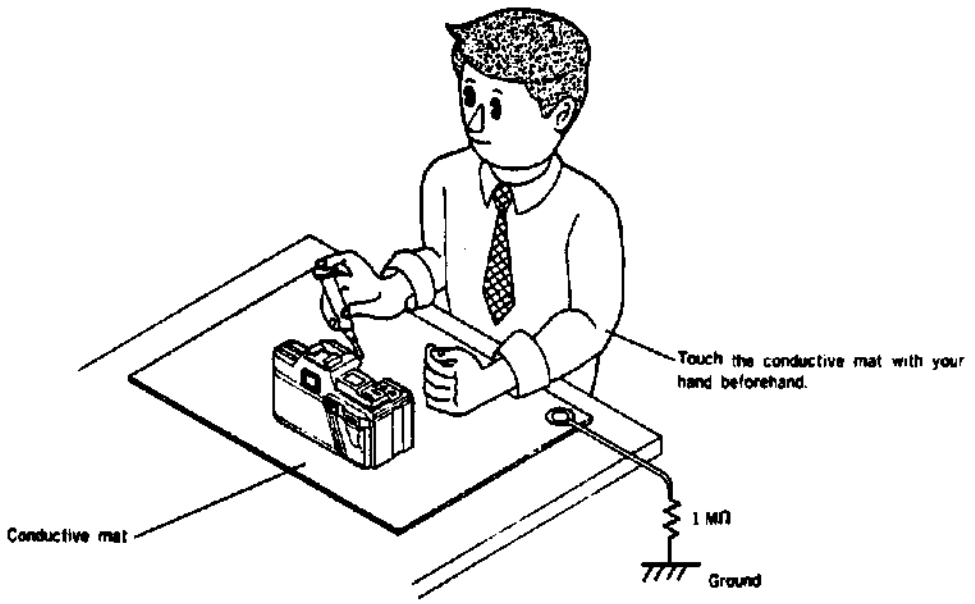
1 . When cleaning, use Flonsolve or alcohol. Do not use thinner, ketone, ether etc.

2 . Secure all parts with the specified screws, taking care not to exert excessive stress to them.

■Handling of the Flexible PC board

The flexible PC board uses MOS ICs and is very sensitive to static electricity. Therefore, the following points must be kept in mind when repairing.

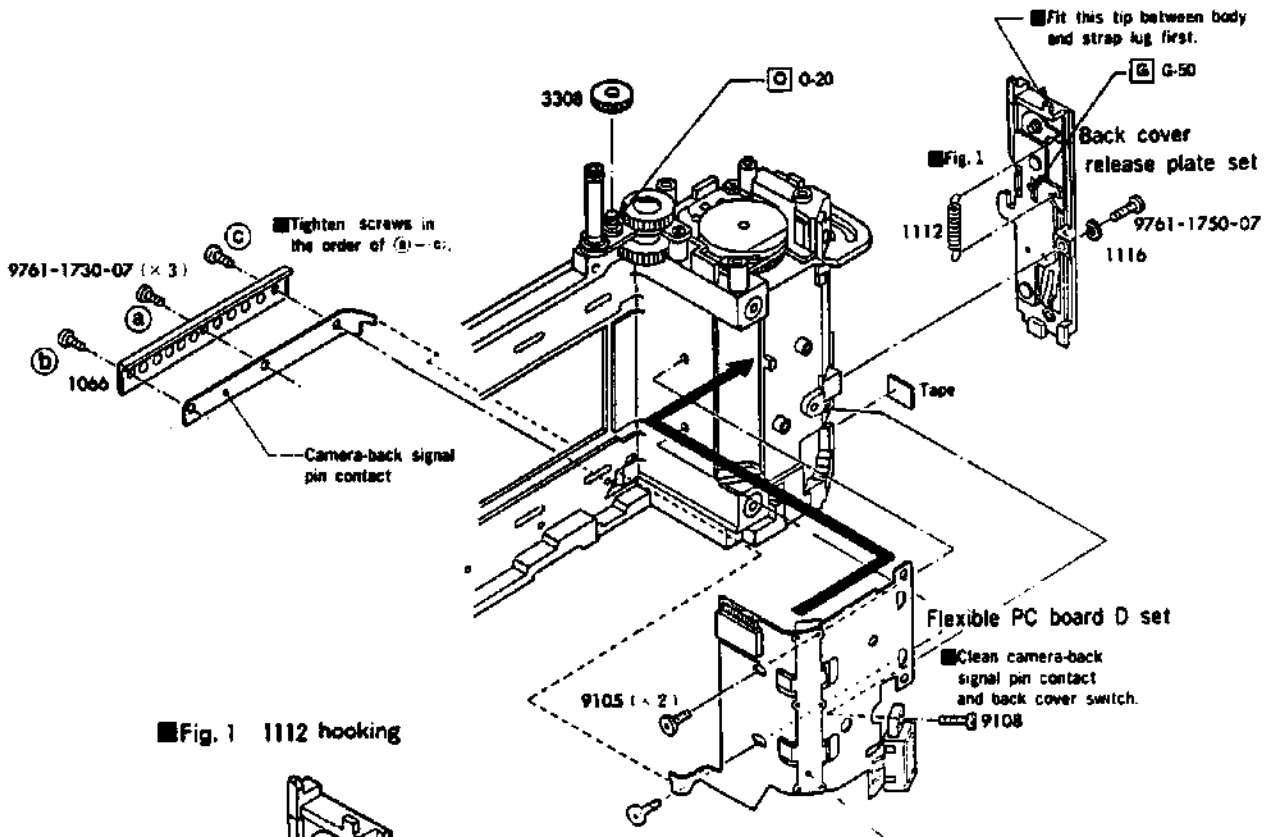
- When handling the flexible PC board itself or wiring it to the body, use a conductive mat to prevent static electricity, and perform all work as shown below.



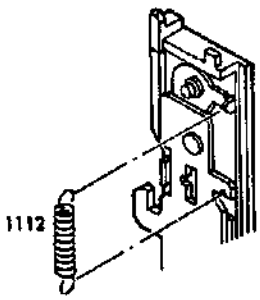
■When grounding is impossible, connect the cable to a large metal plate (steel desk or shelf).

1 Flexible PC board D set, Back cover release plate set

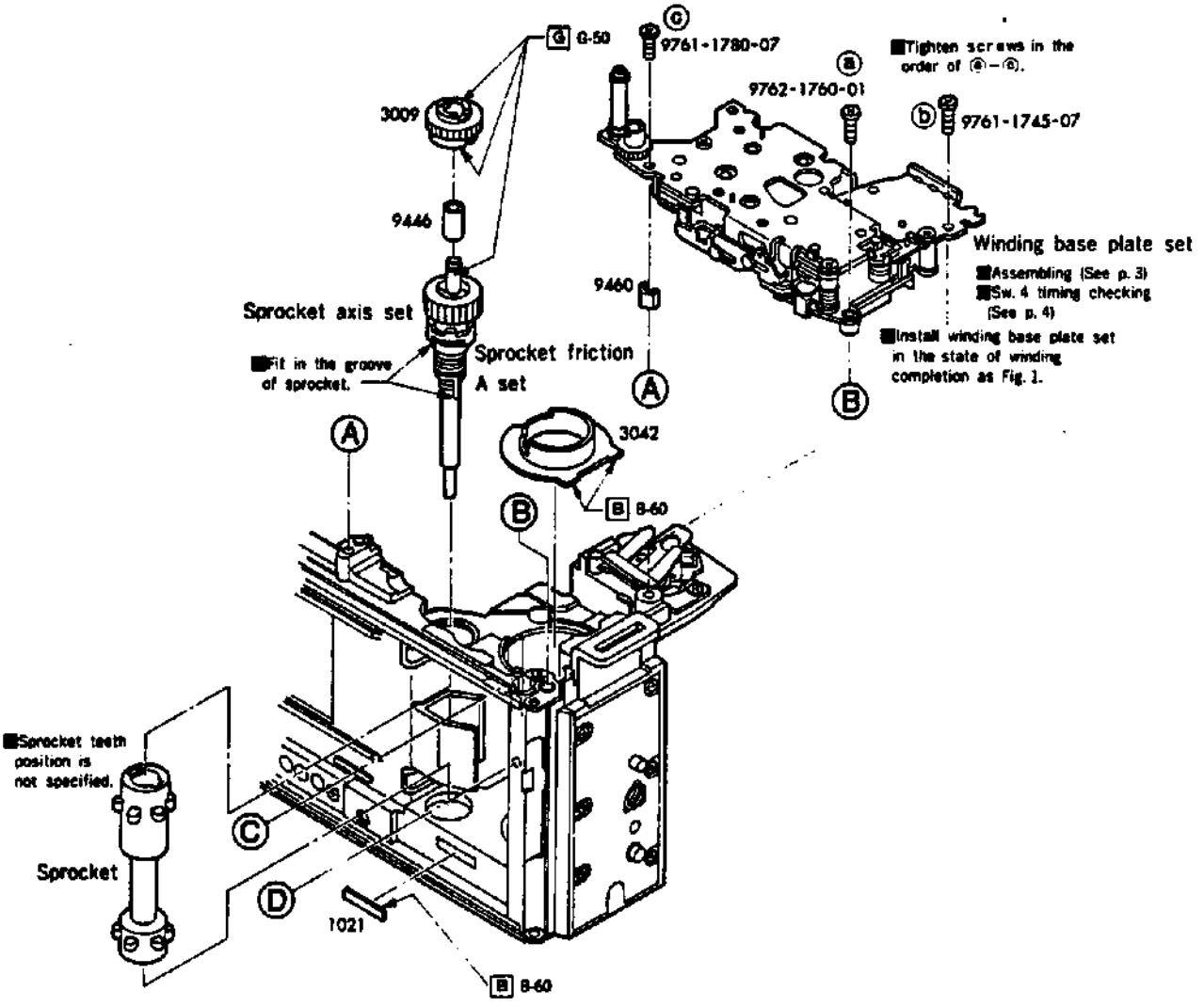
■Beforehand, install film cartridge pressure plate (1071), Side spring (1087), Rewinding base plate set left (0330) and Film guide roller set (0342).



■Fig. 1 1112 hooking



2 Film guide roller set, Sprocket, Winding base plate set



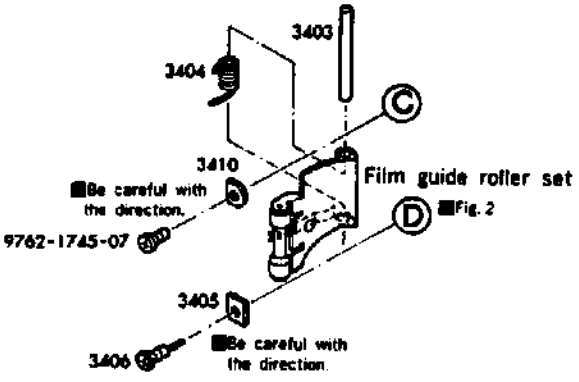


Fig. 2 Film guide roller set installing

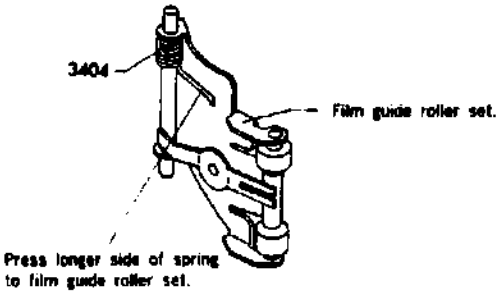
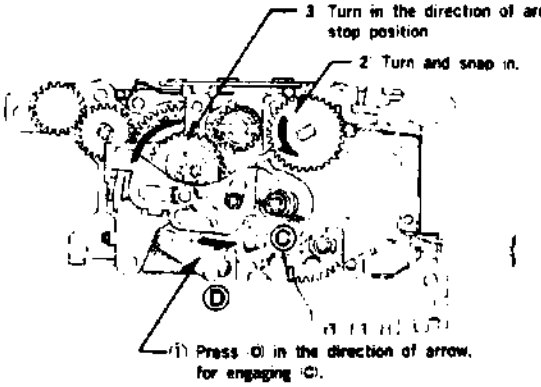
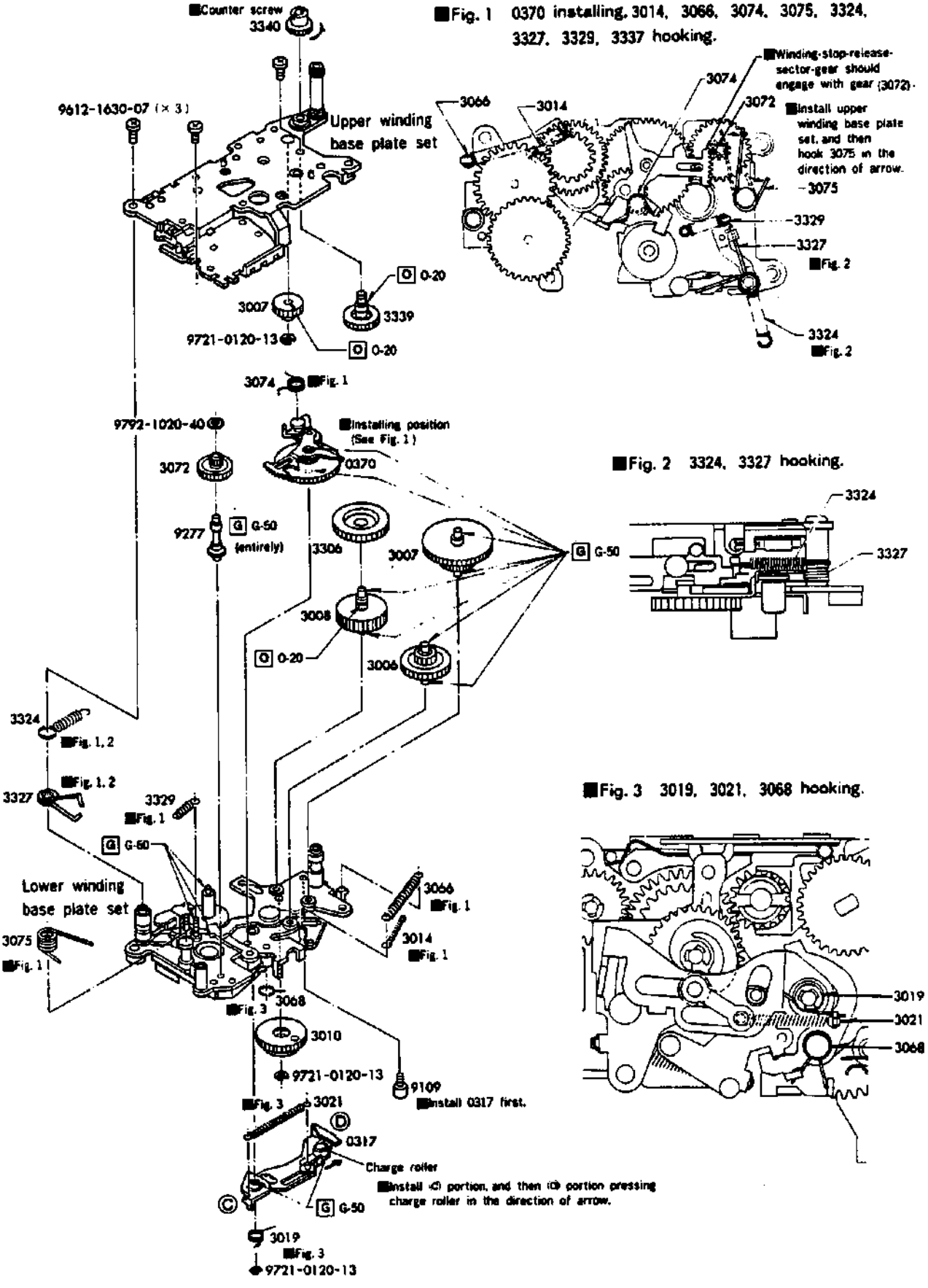


Fig. 1 Winding completion of winding base plate set



■ Winding base plate assembling

■After assembling, check Sw. 4 timing. (See p. 4)



■Fig. 1 0370 installing, 3014, 3066, 3074, 3075, 3324, 3327, 3329, 3337 hooking.

■Fig. 2 3324, 3327 hooking.

■Fig. 3 3019, 3021, 3068 hooking.

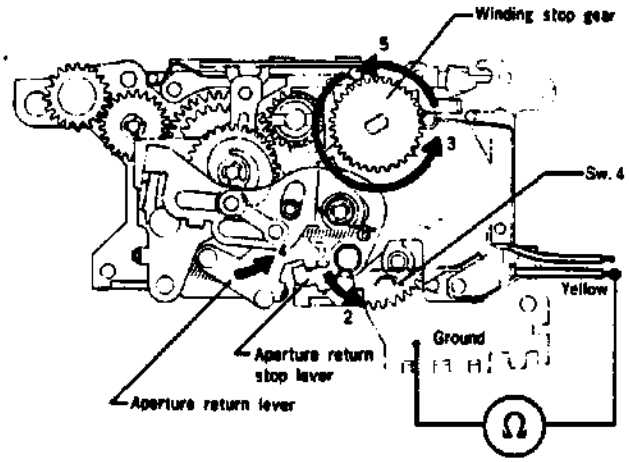
■ Sw. 4 timing checking

■Measuring instrument : Circuit tester

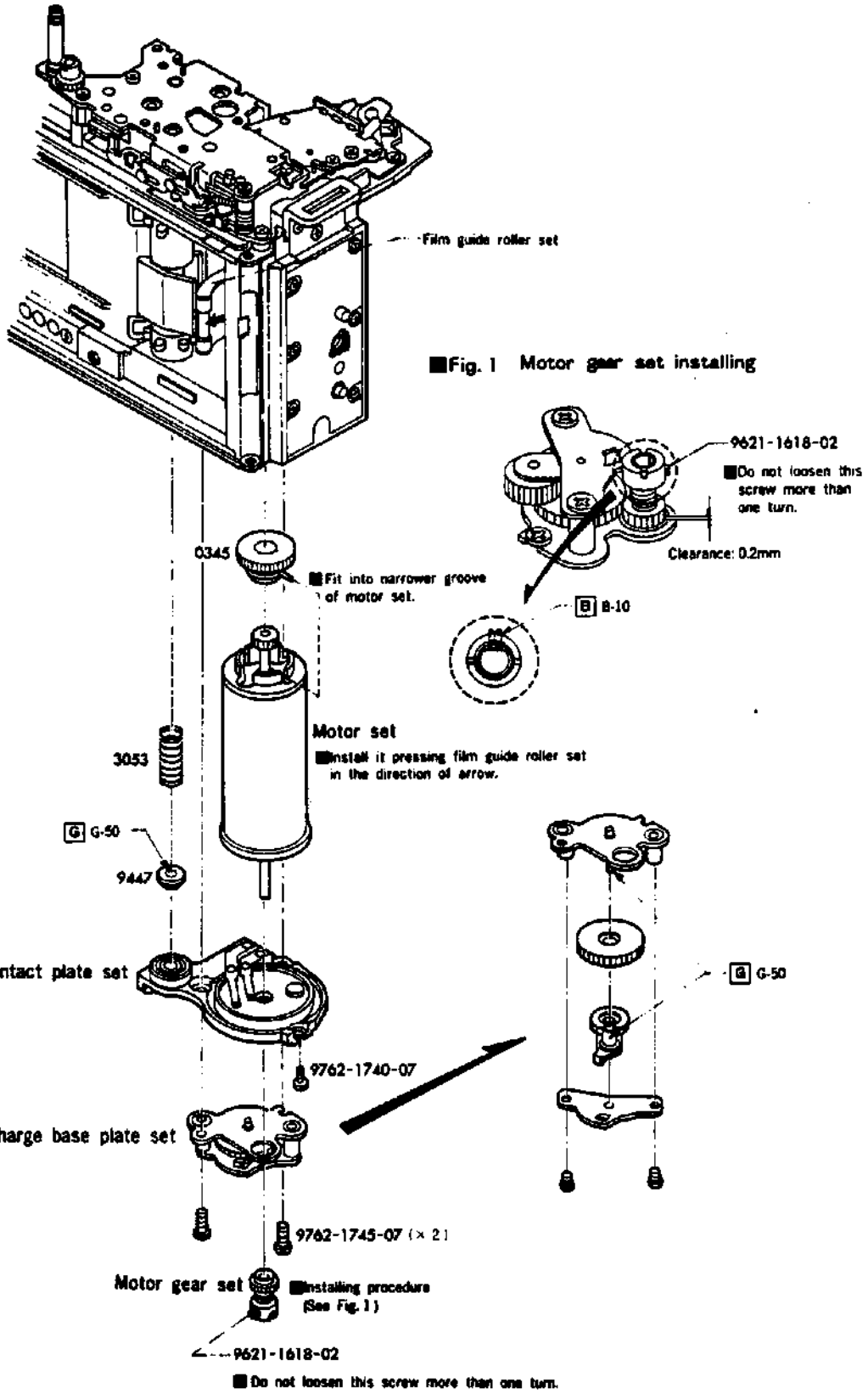
■Checking procedure

1. Set measuring instrument as Fig. below.
2. Disengage aperture return lever and aperture return stop lever. (Push aperture return stop lever in the direction of arrow.)
3. Turn winding stop gear 3/4 rotation counterclockwise. (Sw. 4 ON)
4. Engage aperture return lever and aperture return stop lever (Push aperture return lever in the direction of arrow).
5. Turn winding stop gear counterclockwise slowly and snap in. Make sure that Sw. 4 changes from ON to OFF.

■Fig. 1



3 Motor set, Aperture charge base plate set



■Checking after assembling····· 1. Winding-stop disengages by turning motor gear set counterclockwise 2 times and clockwise 2 times (snap off).

2. Turn take-up drum to winding direction about one revolution and make sure that take-up drum engages and winding completes.

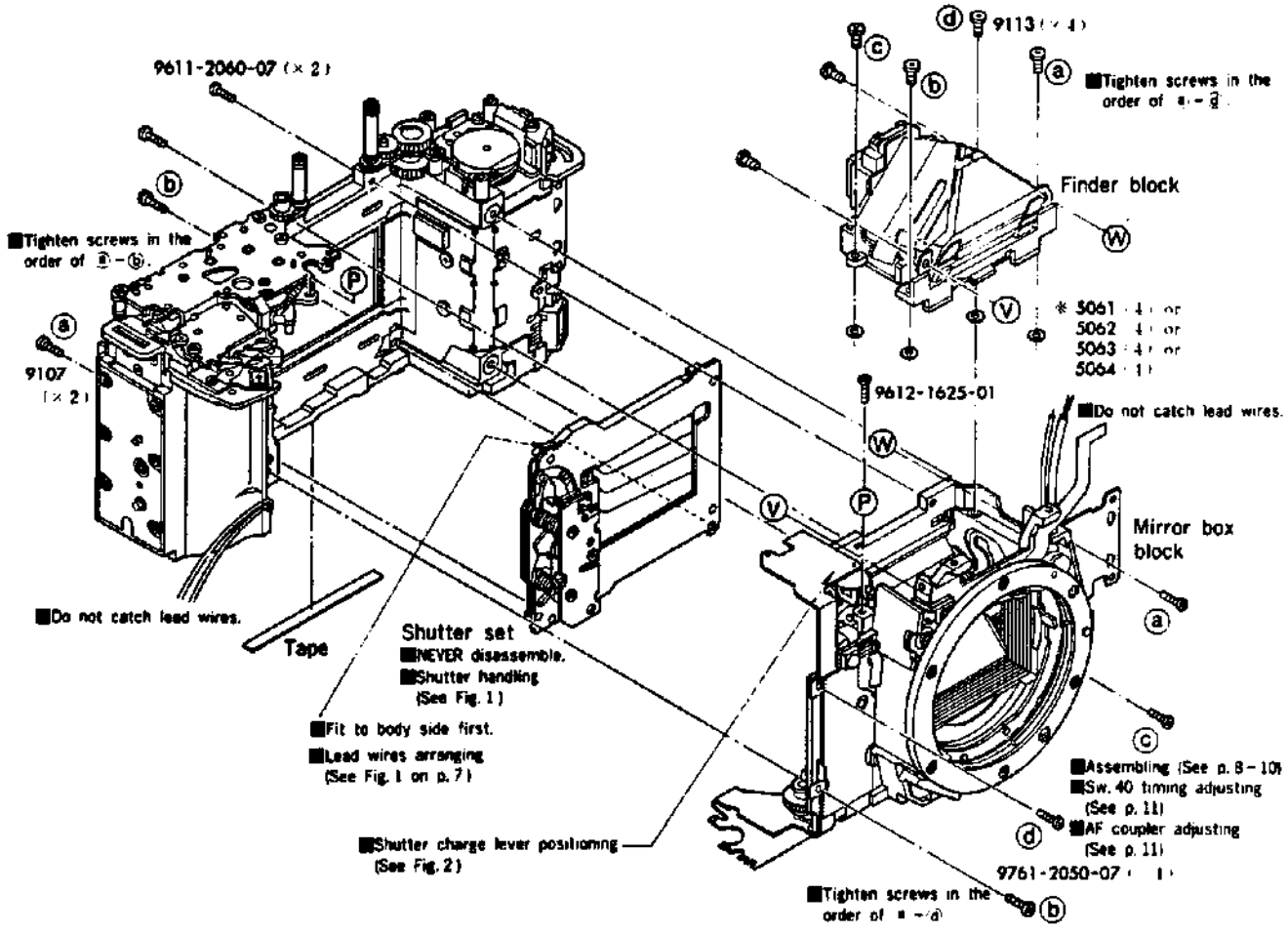
4 Shutter, Mirror box block, Finder block assembling

■Arrange lead wires, flexible PC board referring next page.

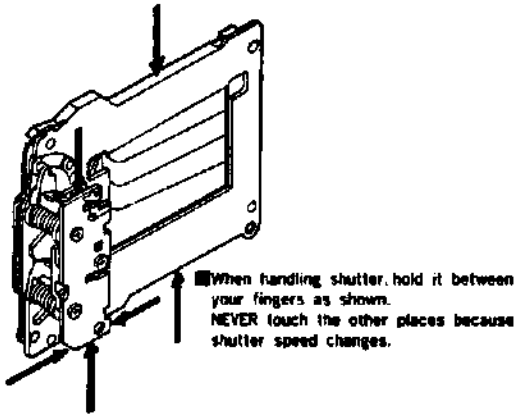
■On body side, complete winding of sprocket and take-up drum. (Lock take-up drum, turning it in winding direction.)

■On mirror box side, set charge lever in the state of shutter release completion.

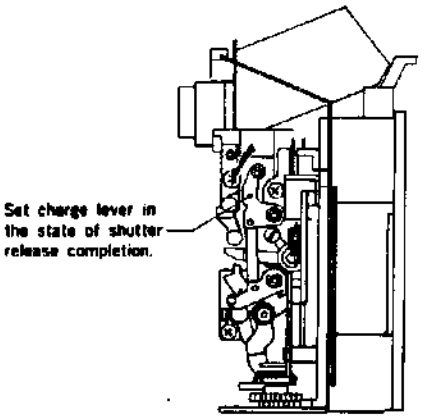
※When replacing mirror box, replace washer to 5061 (× 4). When repairing other parts, use the same (or same thickness) washer (× 4) which is used on the body.


9611-2060-07 (× 2)
9113 (× 4)
■Tighten screws in the order of ⓓ-ⓖ.
Finder block
■Tighten screws in the order of ⓑ-ⓖ.
9107 (× 2)
* 5061 : 4 or
5062 : 4 or
5063 : 4 or
5064 : 1
9612-1625-01
■Do not catch lead wires.
Mirror box block
■Do not catch lead wires.
Tape
Shutter set
■NEVER disassemble.
■Shutter handling (See Fig. 1)
■Fit to body side first.
■Lead wires arranging (See Fig. 1 on p. 7)
■Assembling (See p. 8-10)
■Sw. 40 timing adjusting (See p. 11)
■AF coupler adjusting (See p. 11)
■Shutter charge lever positioning (See Fig. 2)
9761-2050-07 (1)
■Tighten screws in the order of ⓐ-ⓓ

■Fig. 1 Shutter handling


■When handling shutter, hold it between your fingers as shown.
NEVER touch the other places because shutter speed changes.

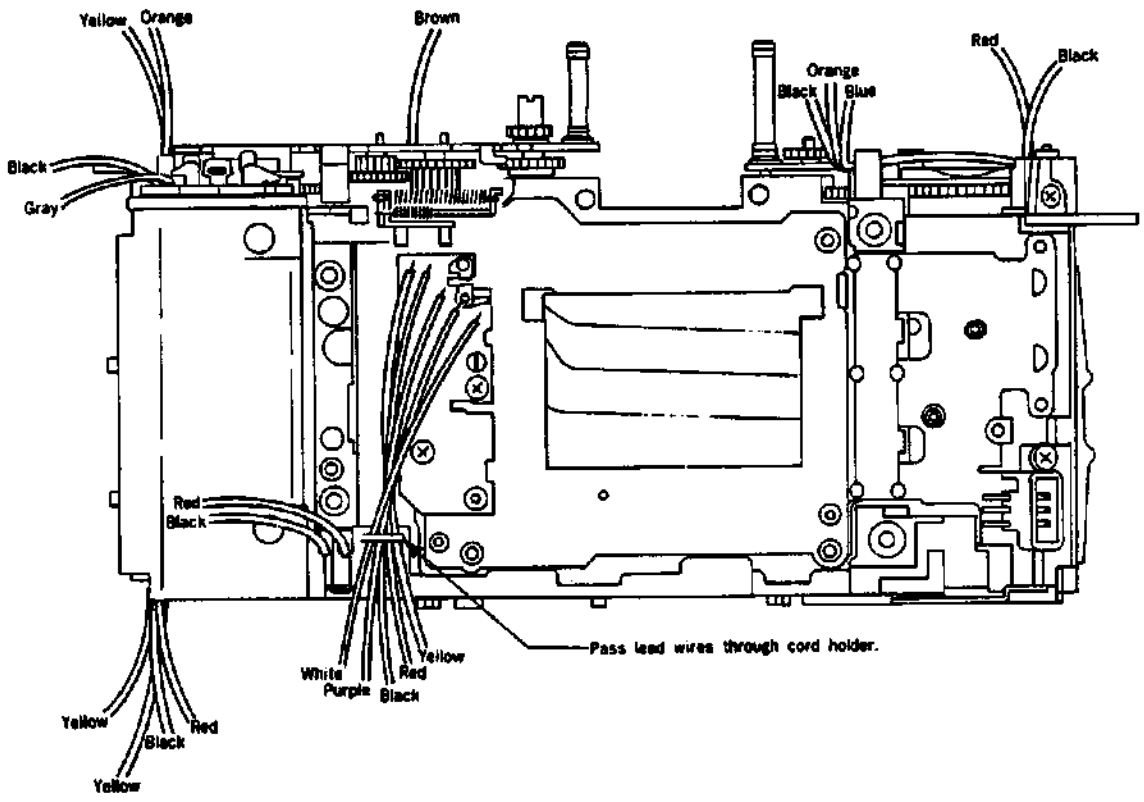
■Fig. 2 Shutter charge lever positioning



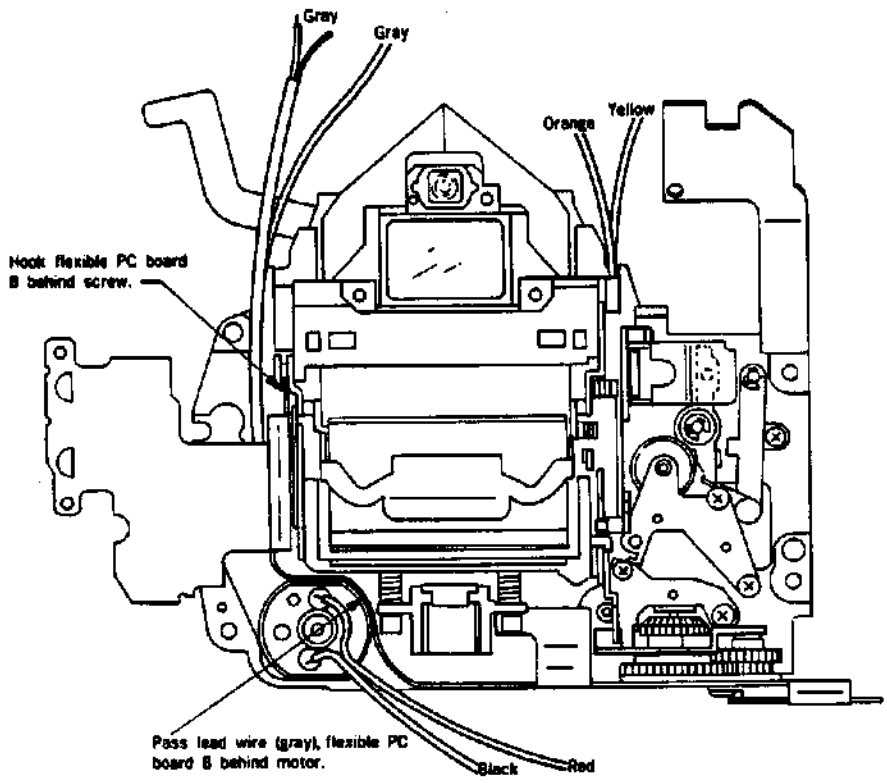
■Checking after assembling

1. Turn motor gear set counterclockwise 8 times (make sure that shutter curtain runs) and then clockwise 8 times, referring the procedure on p. 5.
2. Turn take-up drum to winding direction about one revolution and make sure that take-up drum engages and winding completes.

■Fig. 1


Yellow
Orange
Brown
Red
Black
Orange
Black
Blue
Black
Gray
Red
Black
Pass lead wires through cord holder.
White
Purple
Yellow
Red
Black
Yellow
Black
Red
Yellow

■Fig. 2

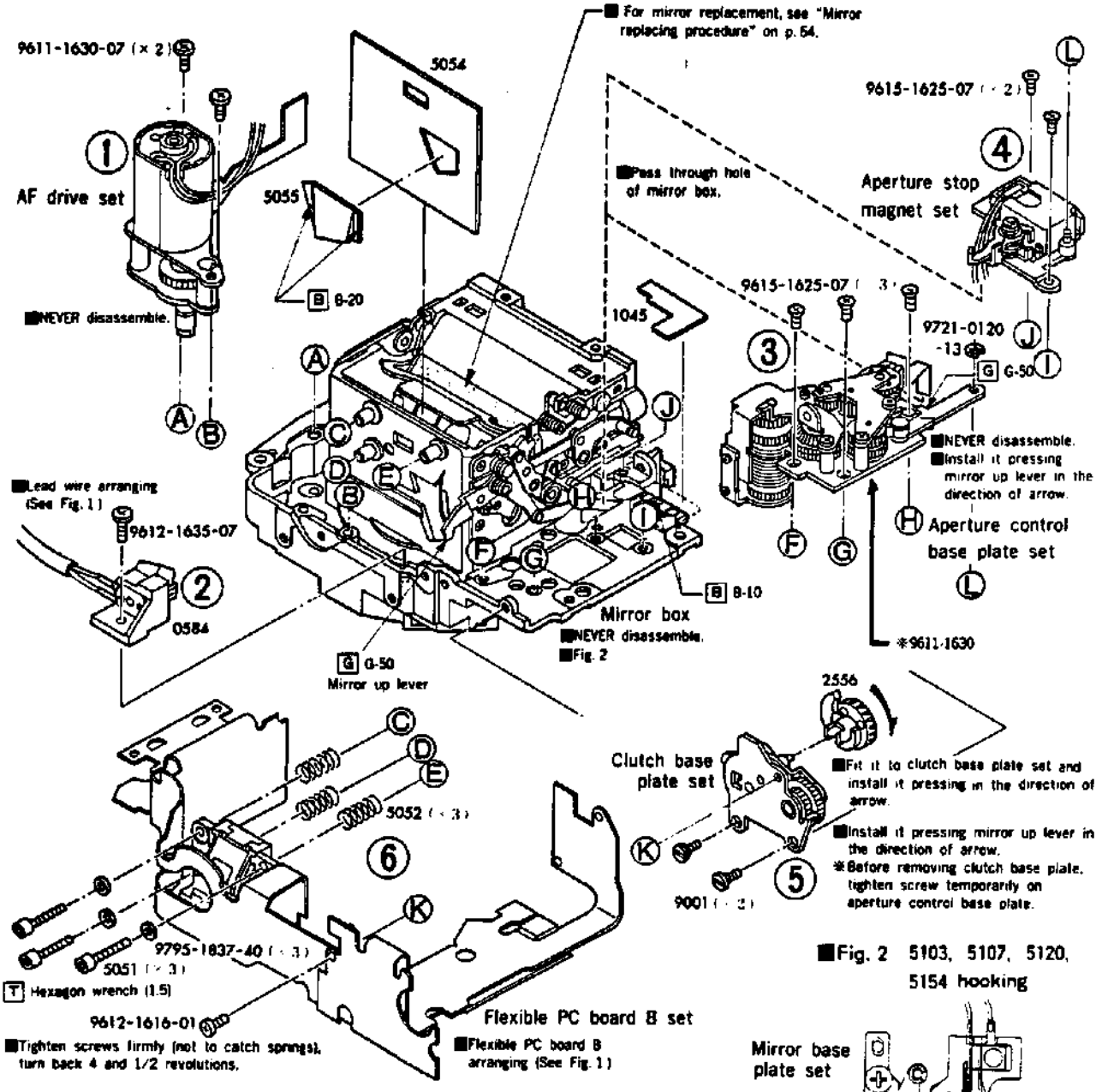

Gray
Gray
Orange
Yellow
Hook flexible PC board B behind screw.
Pass lead wire (gray), flexible PC board B behind motor.
Black
Red

■ Mirror box assembling-1

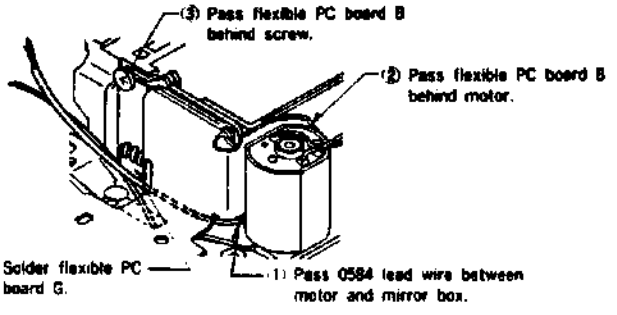
■When disassembling clutch base plate or aperture ring (See p. 9), tighten marked (*) screw on aperture control base plate, and never fail to remove this screw after completion of assembling.

■Assemble the parts in the order of ①–⑥.

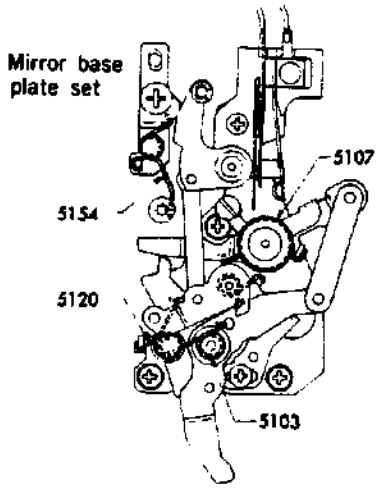
■When replacing mirror box, replace washer (see p. 6) to 5061 (× 4). When repairing other parts, use the same (or same thickness) washer (× 4) which is used on the body.


■For mirror replacement, see "Mirror replacing procedure" on p. 54.
9611-1630-07 (× 2)
5054
9615-1625-07 (× 2)
AF drive set
5055
■Pass through hole of mirror box.
Aperture stop magnet set
B 8-20
9615-1625-07 (× 3)
1045
9721-0120-13
G G-50
■NEVER disassemble.
■NEVER disassemble.
■Lead wire arranging (See Fig. 1)
9612-1635-07
■Install it pressing mirror up lever in the direction of arrow.
H Aperture control base plate set
0584
B 8-10
Mirror box
■NEVER disassemble.
■Fig. 2
G G-50
Mirror up lever
*9611-1630
2556
Clutch base plate set
■Fit it to clutch base plate set and install it pressing in the direction of arrow.
■Install it pressing mirror up lever in the direction of arrow.
*Before removing clutch base plate, tighten screw temporarily on aperture control base plate.
9001 (× 2)
5052 (× 3)
9795-1837-40 (× 3)
5051 (× 3)
T Hexagon wrench (1.5)
9612-1616-01
■Tighten screws firmly (not to catch springs), turn back 4 and 1/2 revolutions.
Flexible PC board B set
■Flexible PC board B arranging (See Fig. 1)

■Fig. 1 0584 lead wire, flexible PC board B arranging.

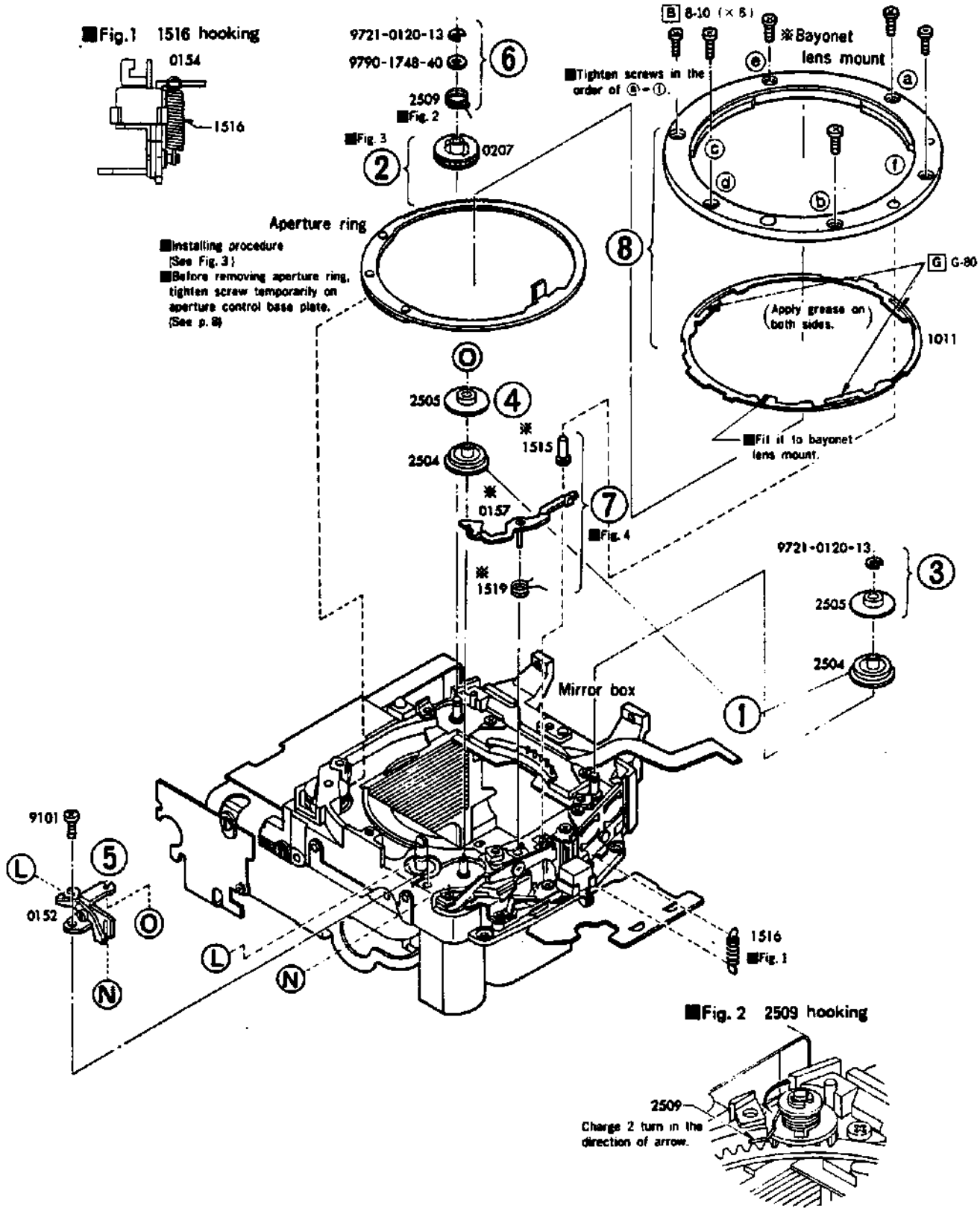

③ Pass flexible PC board B behind screw.
② Pass flexible PC board B behind motor.
④ Solder flexible PC board G.
① Pass 0584 lead wire between motor and mirror box.

■Fig. 2 5103, 5107, 5120, 5154 hooking



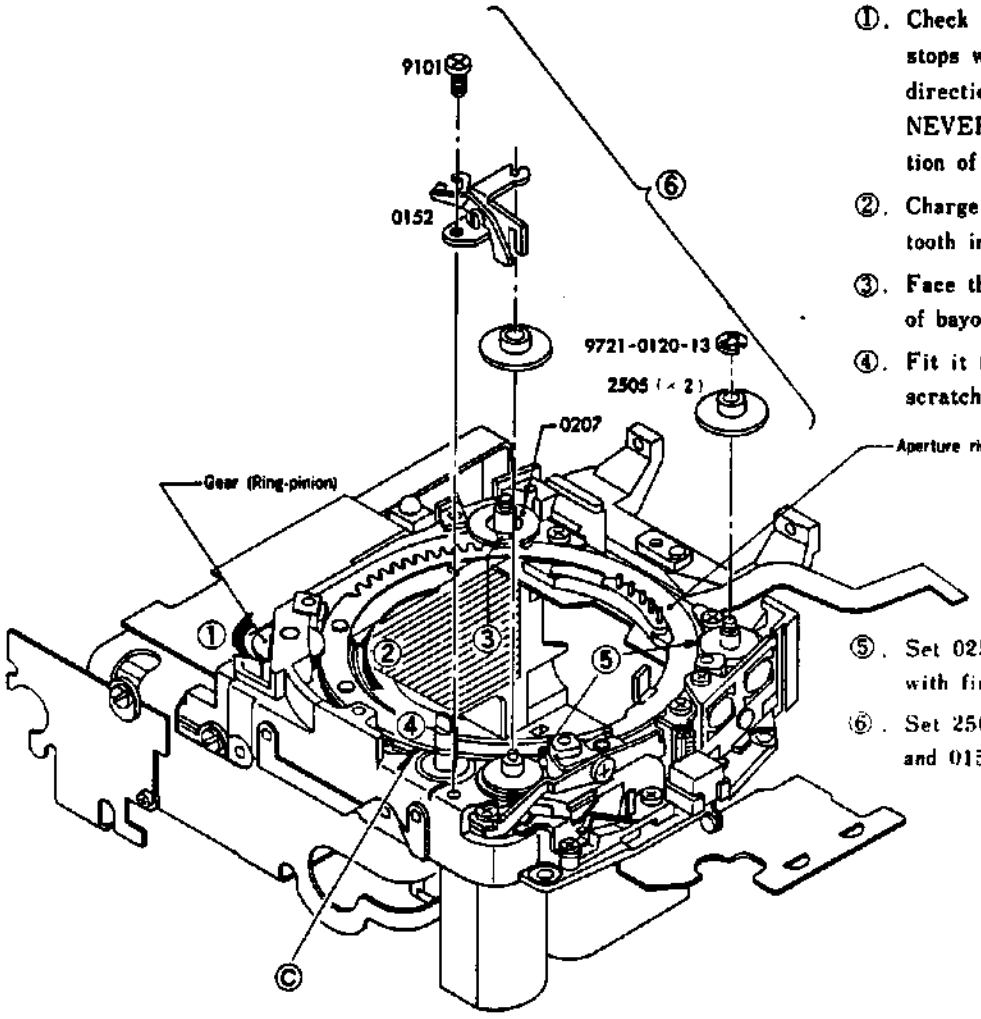
■ Mirror box assembling-2

■When removing bayonet lens mount, hold marked (※) parts (× 3) by tweezers etc. not to jump up.
■After assembling, adjust timing of Sw. 40 and AF coupler (p. 11).
■Assemble the parts in the order of ①–⑨.



■Fig. 2 2509 hooking

■Fig. 3 Aperture ring installing



①. Check if gear (Ring-pinion) stops when turning in the direction of arrow.
NEVER turn in reverse direction of arrow.

②. Charge aperture ring by one tooth in the diraction of arrow.

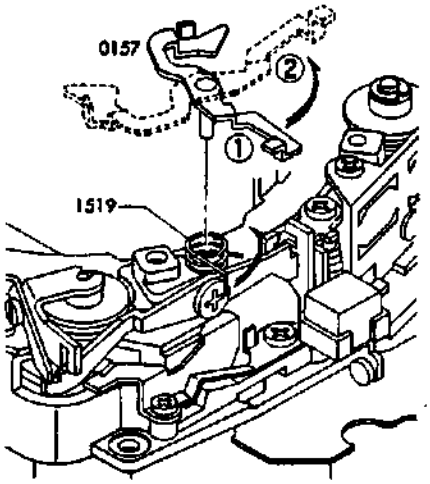
③. Face the hole of 0207 the center of bayonet lens mount.

④. Fit it to A portion. (Do not scratch mirror box.)

⑤. Set 0250 on pulleys and press with finger.

⑥. Set 2502 (× 2) using E ring and 0152.

■Fig. 4 1515 installing

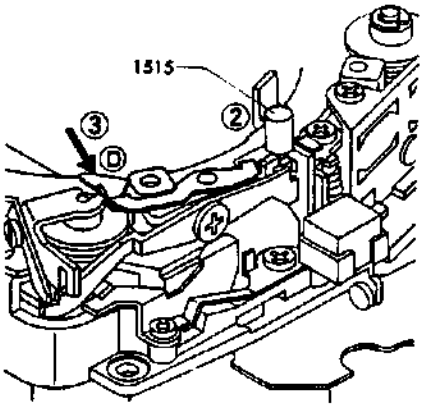


①. Hook spring (1519) on 0157.

②. Shift 0157 in the direction of arrow 1, hold it by 1515.

③. Fit bayonet lens mount, snap 0157 pressing in the direction of arrow 2.
(0157 and 1515 are engaged.)

④. Tighten screws (×6) on bayonet lens mount.



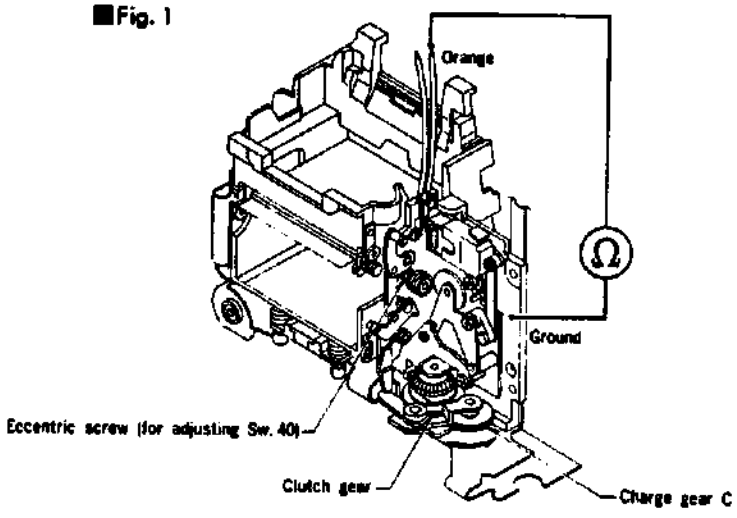
■ Sw. 40 timing adjusting

■Measuring instrument : Circuit tester

■Adjusting procedure

1. Set the measuring insturment as Fig. 1.
2. Turn charge gear C in the direction of arrow to stop position.
3. Turn back charge gear C slowly to return clutch gear for 3 teeth. Turn eccentric screw for changing Sw. 40 from ON to OFF.

■Fig. 1



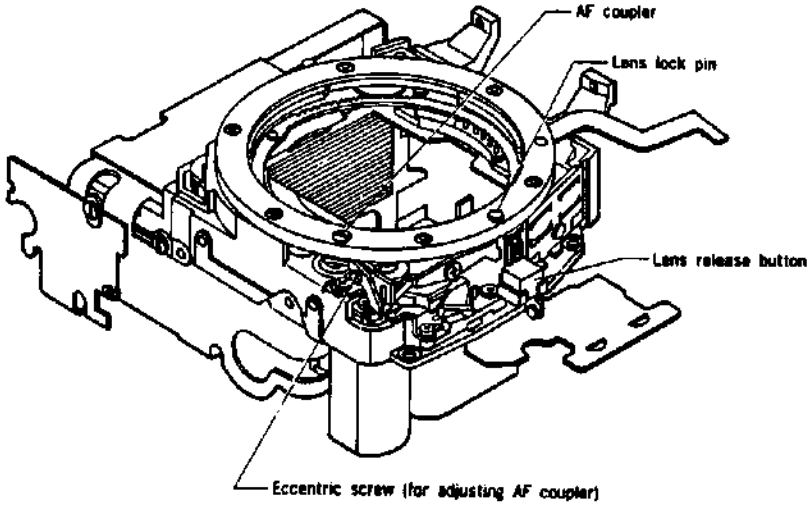
■ AF coupler adjusting

■Measuring instrument : Vernier calipers

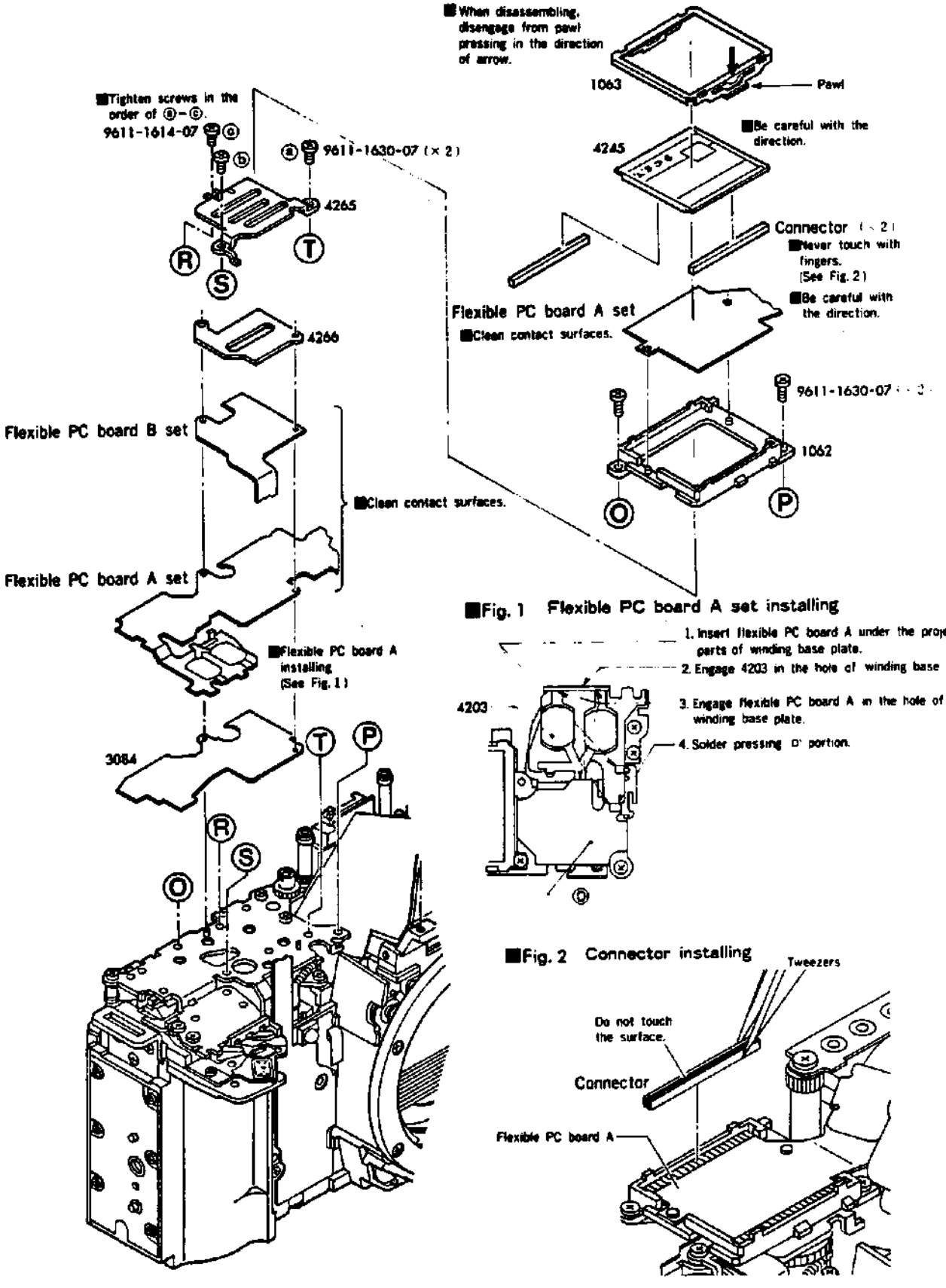
■Adjusting procedure

1. Press lens release button. Adjust the height of AF coupler turning eccentric screw, in order that AF coupler is not projected from bayonet lens mount when lens lock pin is lower than bayonet lens mount.
2. Press Ⓓ. (See Fig. 4 on p. 10.) Adjust height of AF coupler, turning eccentric screw, in order that AF coupler is projected $1.6^{+0.2}_{0}$ mm from bayonet lens mount.
3. Repeat above adjusting procedures 1–2.

■Fig. 2



5 Flexible PC board A set assembling-1

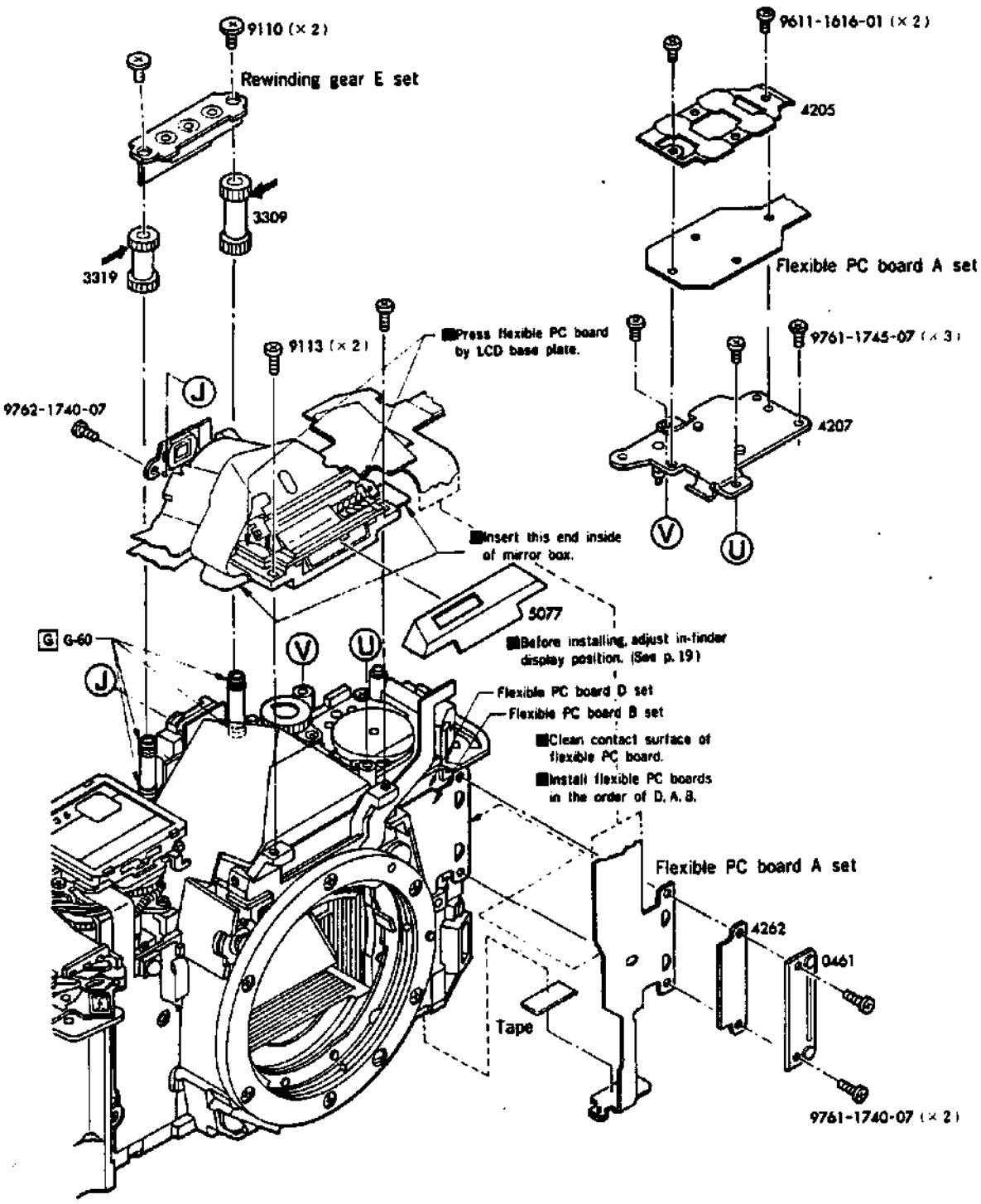

■When disassembling, disengage from pawl pressing in the direction of arrow.
1063
Pawl
■Be careful with the direction.
4245
Connector (× 2)
■Never touch with fingers. (See Fig. 2)
■Be careful with the direction.
Flexible PC board A set
■Clean contact surfaces.
9611-1630-07 (× 2)
1062
■Tighten screws in the order of ⓐ–ⓒ.
9611-1614-07
ⓐ 9611-1630-07 (× 2)
4265
4266
Flexible PC board B set
■Clean contact surfaces.
Flexible PC board A set
■Flexible PC board A installing (See Fig. 1)
3084

■Fig. 1 Flexible PC board A set installing

1. Insert flexible PC board A under the projected parts of winding base plate.
2. Engage 4203 in the hole of winding base plate.
4203
3. Engage flexible PC board A in the hole of winding base plate.
4. Solder pressing portion.

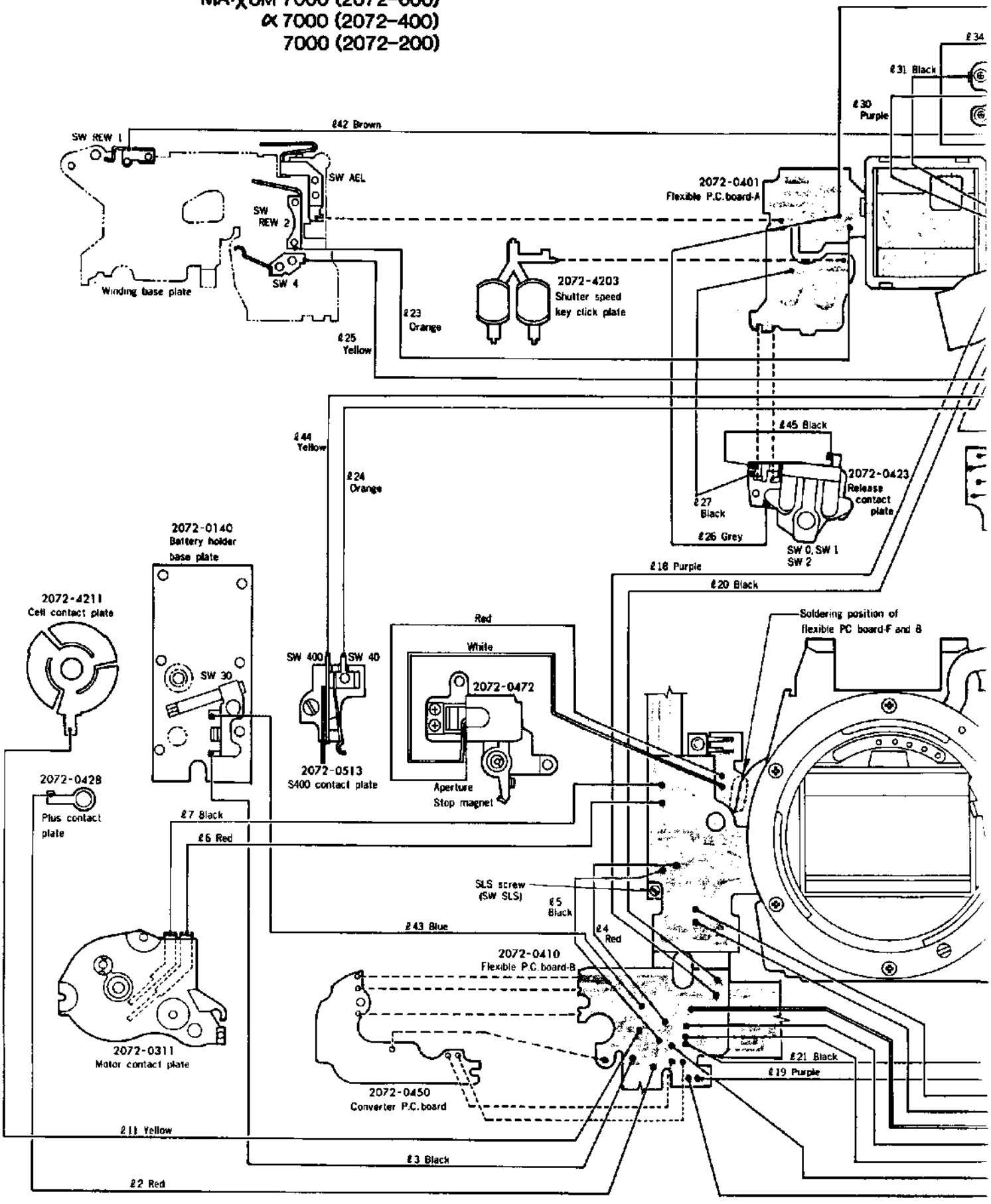
■Fig. 2 Connector installing

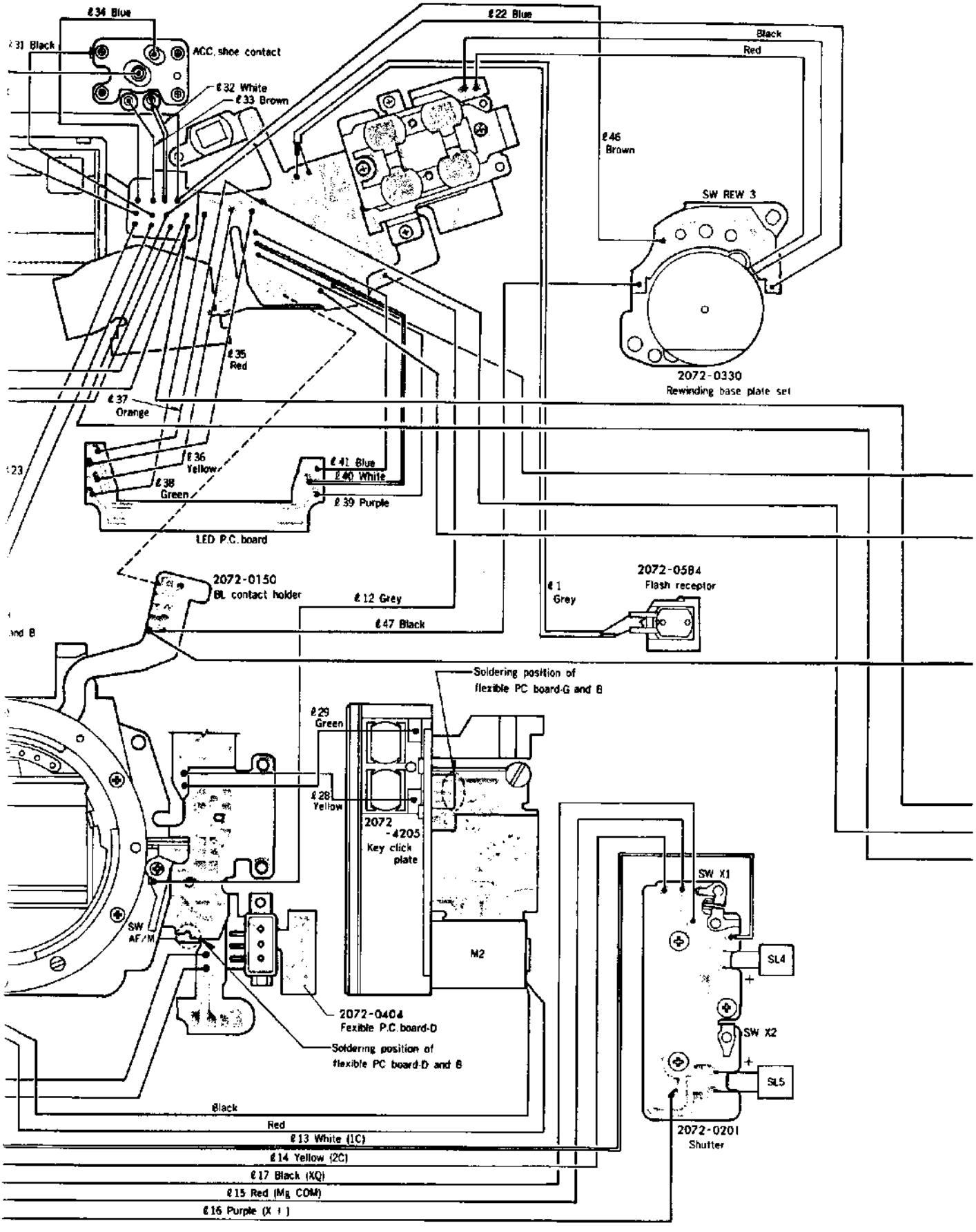
6 Flexible PC board A set assembling-2

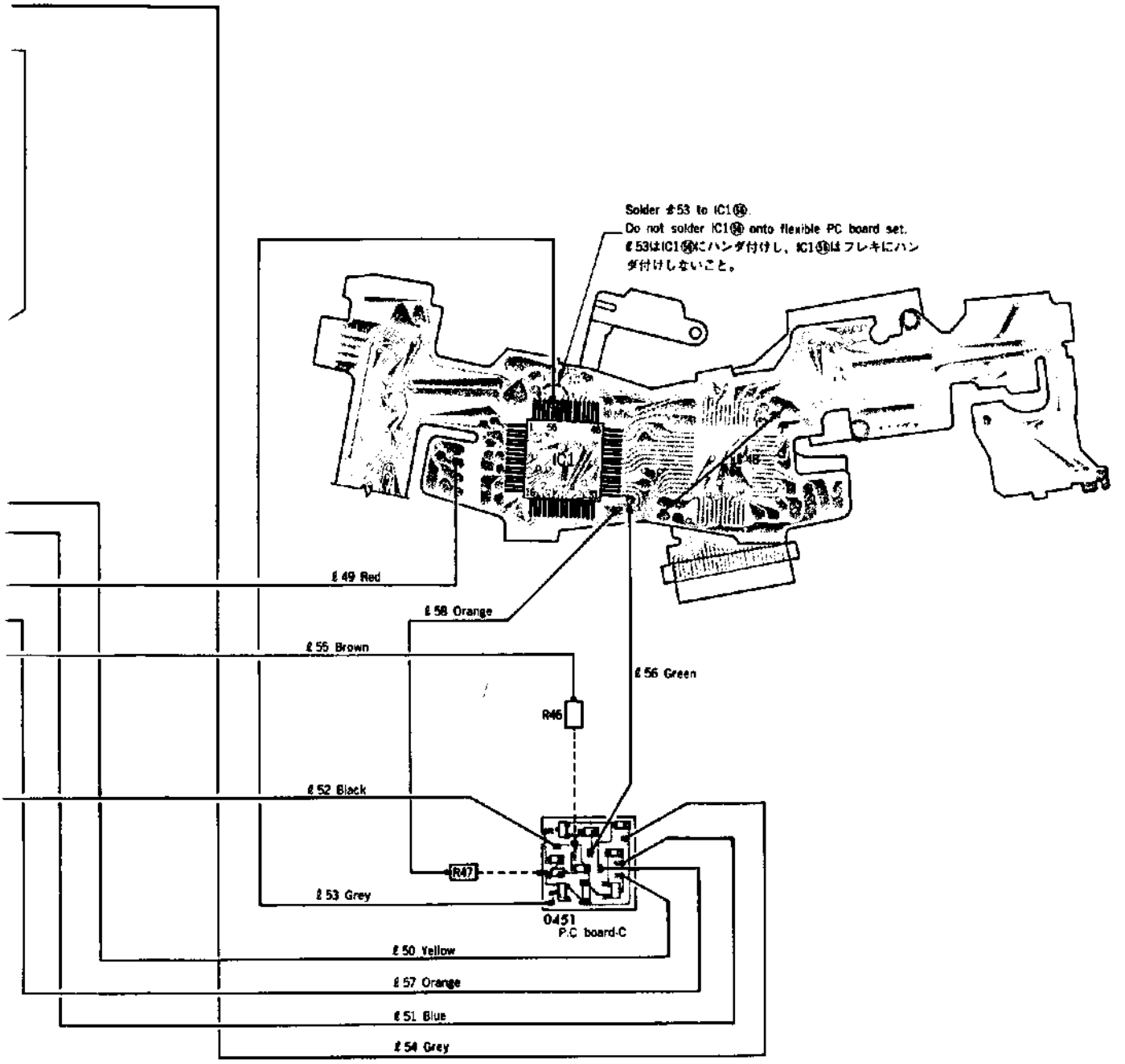


■After completion of assembling, solder lead wires referring Schematic Wiring Diagram on next page, and arrange the lead wires following Lead Wire Arrangement on p. 14.

MAXXUM 7000 (2072-600)
α 7000 (2072-400)
7000 (2072-200)

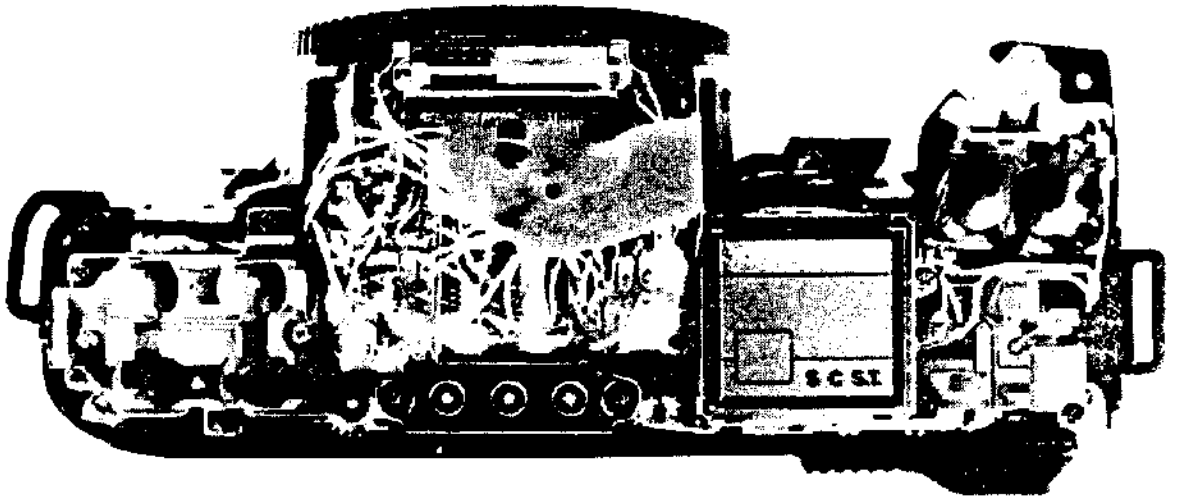



ℓ34 Blue
ℓ31 Black
AGC, shoe contact
ℓ32 White
ℓ33 Brown
ℓ22 Blue
Black
Red
ℓ46
Brown
SW REW 3
2072-0330
Rewinding base plate set
ℓ35
Red
ℓ37
Orange
ℓ36
Yellow
ℓ38
Green
ℓ41 Blue
ℓ40 White
ℓ39 Purple
LED P.C. board
2072-0150
BL contact holder
ℓ12 Grey
ℓ47 Black
ℓ1
Grey
2072-0584
Flash receptor
Soldering position of
flexible PC board-G and B
ℓ29
Green
ℓ28
Yellow
2072
-4205
Key click
plate
SW
AF/M
M2
SW X1
SL4
SW X2
SL5
2072-0404
Fexible P.C. board-D
Soldering position of
flexible PC board-D and B
2072-0201
Shutter
Black
Red
ℓ13 White (1C)
ℓ14 Yellow (2C)
ℓ17 Black (XQ)
ℓ15 Red (Mg COM)
ℓ16 Purple (X ↑)

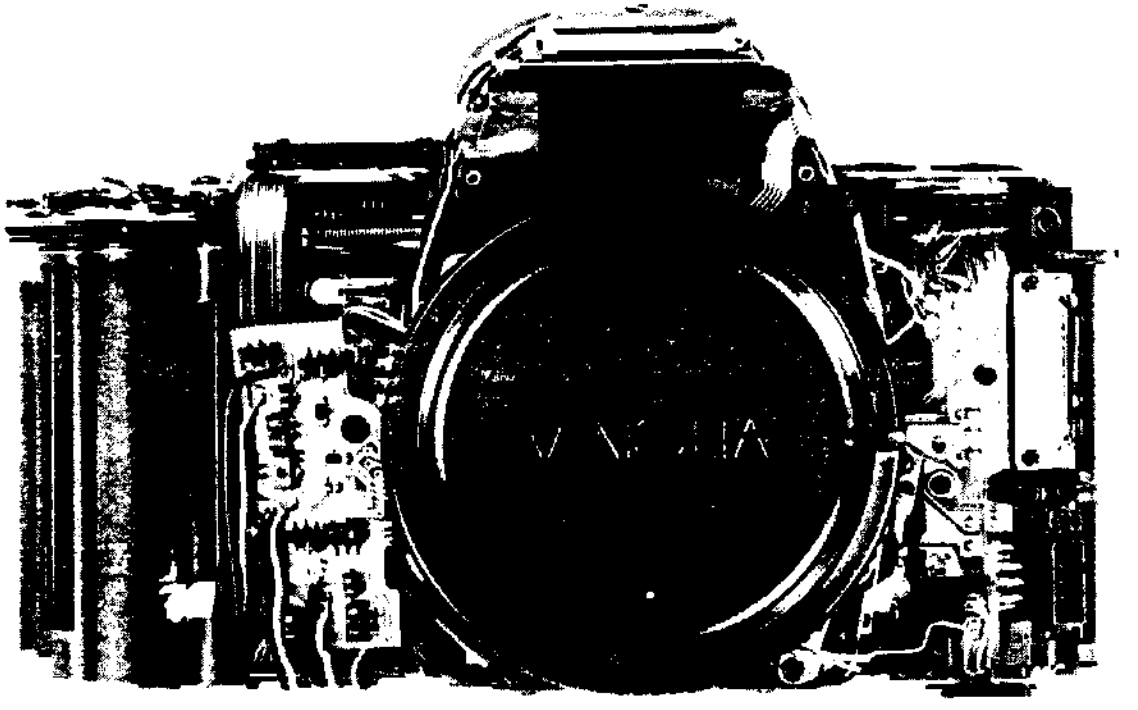

Solder ⌀53 to IC1㊿.
Do not solder IC1㊾ onto flexible PC board set.
⌀53はIC1㊿にハンダ付けし、IC1㊾はフレキにハンダ付けしないこと。
IC1
⌀49 Red
⌀58 Orange
⌀55 Brown
⌀56 Green
R46
⌀52 Black
R47
⌀53 Grey
0451
P.C board-C
⌀50 Yellow
⌀57 Orange
⌀51 Blue
⌀54 Grey

■ Lead wires arranging

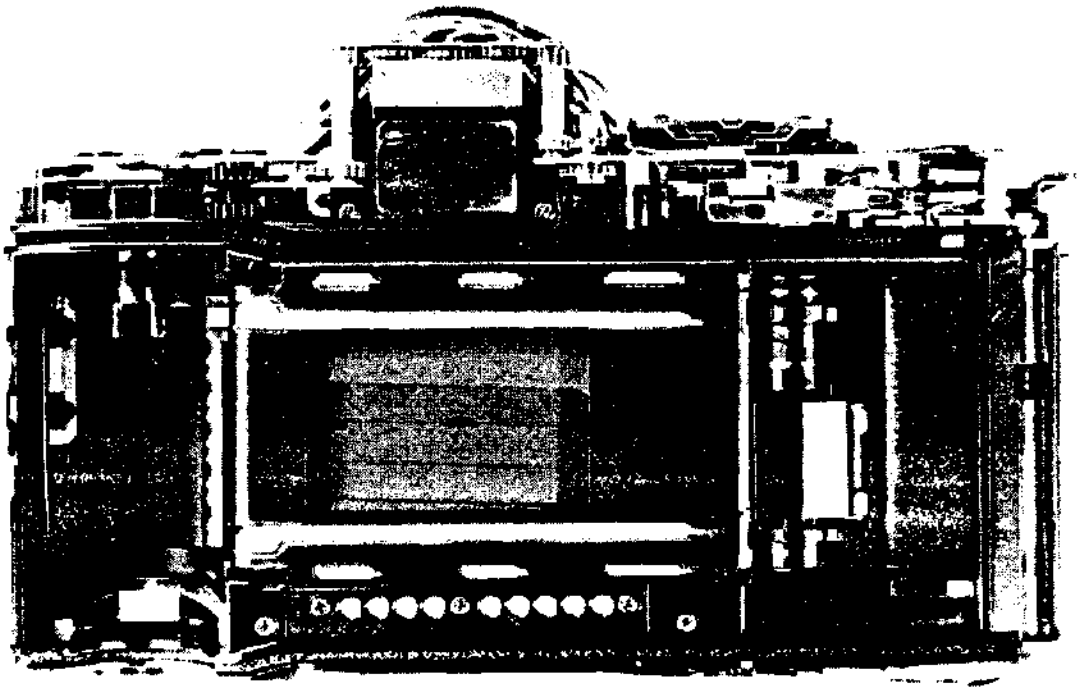
■Fig. 1



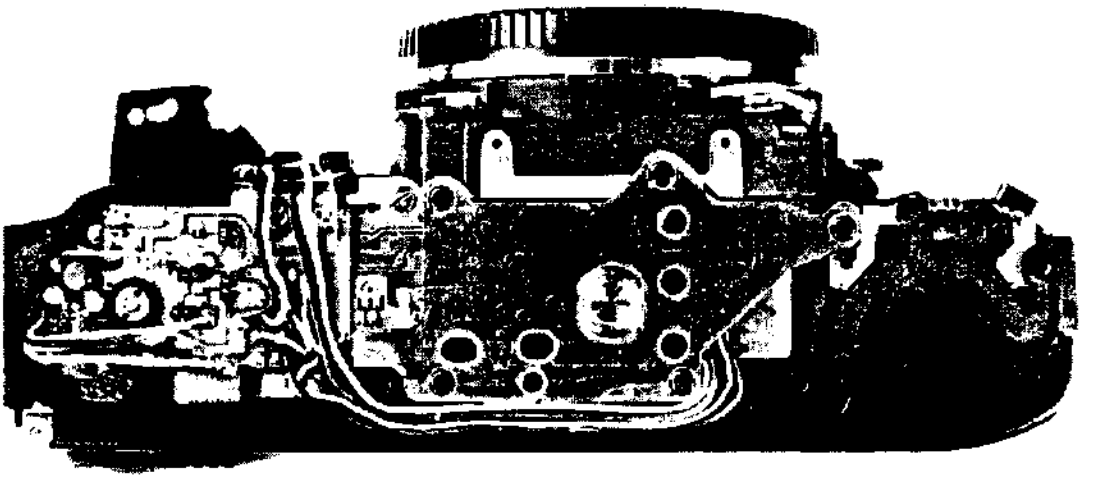
■Fig. 2



■Fig. 3



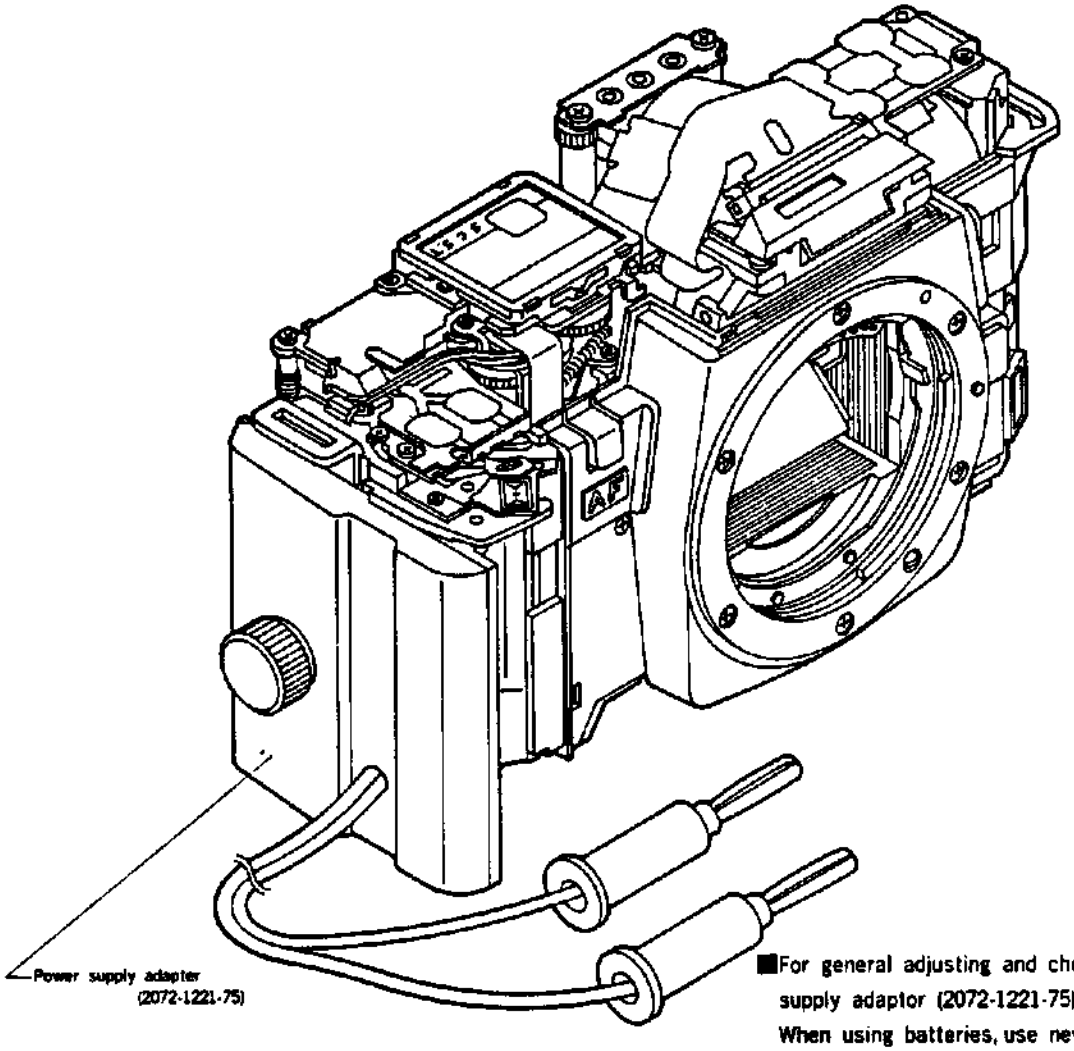
■Fig. 4



■ Preparation for checking/adjusting

■Before adjusting, put the camera into the condition below, check general functioning.

■Fig. 1



■For general adjusting and checking, use power supply adaptor (2072-1221-75) at 6V/2A setting. When using batteries, use new ones.

■Check body functioning.

1. Key switch functioning
2. Shutter, winding functioning
3. Metering
4. AF functioning

■See Trouble-Shooting for irregular body functioning.

■ Body back adjusting

■Measuring instruments : Body back gauge
: Flat plate (for 2005)
: Dial gauge

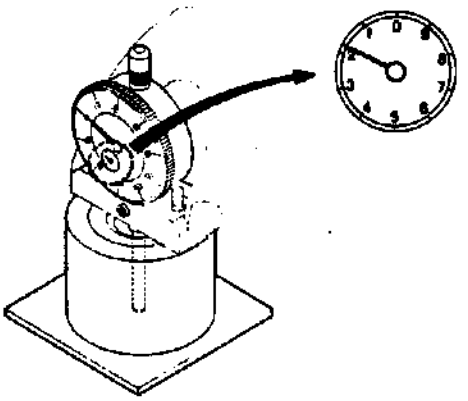
■Adjusting procedure

[Standard]

※ 44.70±0.01mm

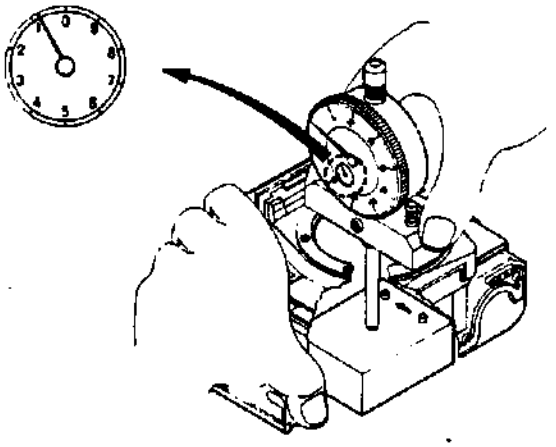
※Body back is 1 mm longer than conventional SLR body. Check short indicator of dial gauge as Fig. 1 and then measure body back as Fig. 2.

■Fig. 1



43.70mm

■Fig. 2



44.70mm

● If the body back is lower than the standard value, insert adjusting washers under the bayonet mount.

[Types of adjusting washers]

Parts No.	2005-1061-81	2005-1062-81	2005-1063-81
Thickness (mm)	0.02	0.05	0.1

● If the body back is higher than the standard value, replace the bayonet mount with the bayonet mount used for repair (2072-1010-81) and adjust in combination with the adjusting washers.
The flange of the bayonet mount used for repair is 0.1mm thinner than that of the regular bayonet mount (2072-1010-02).

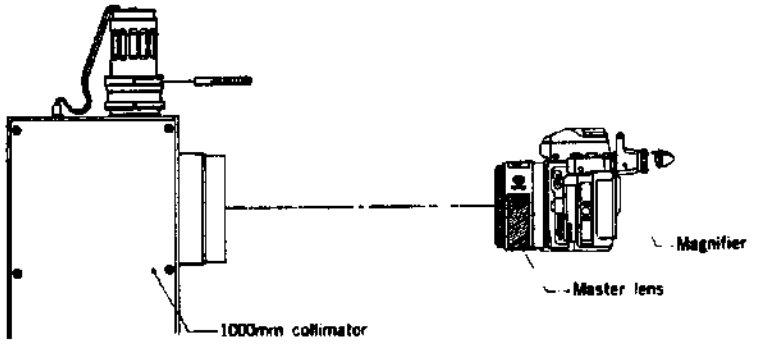
■ Finder back adjusting

■Measuring instruments : 1000mm collimator (MODEL RC-1000 Ⅰ, Ⅱ, Ⅲ)
: Master lens (2072-0001-75)
: Magnifier
: VB adjuster (2072-5112-75)

■Adjusting procedure

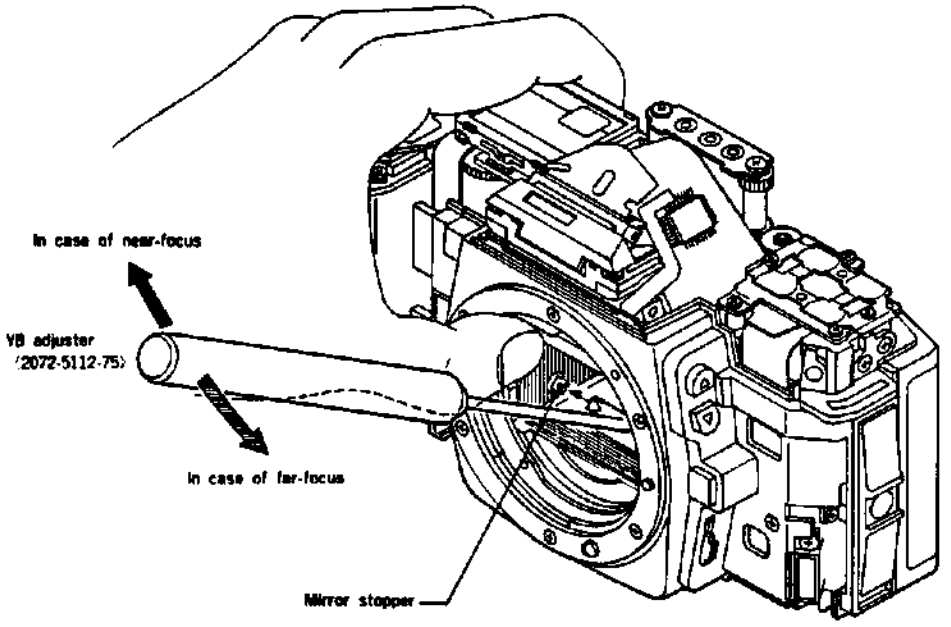
1. Set the camera so that chart image is shown in the center of finder, and set the focusing lens of master lens to infinity (∞).

■Fig. 1



2. Make sure that the scale of master lens is positioned at infinity (∞) and move mirror stopper up and down to bring chart image into focus. (See Fig. 2)

■Fig. 2



● Adjust finder back, holding mirror with finger as Fig. 2.

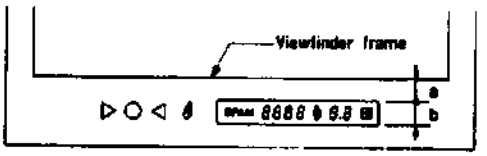
3. When the focusing ring of master lens is turned to adjust focus after operating shutter several times, chart image should be in focus at infinity (∞).

■ In-finder display position adjusting

[Standard]

Height	$\frac{1}{3}b < a < \frac{1}{2}b$
Display	Should be parallel to viewfinder frame and should not be covered.

■Fig. 1

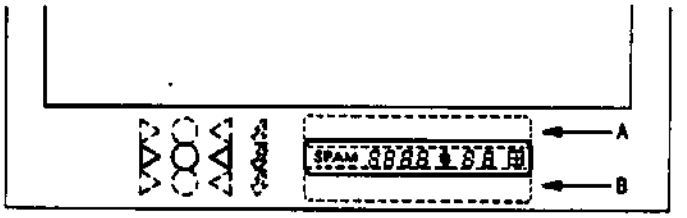


■Adjusting procedure

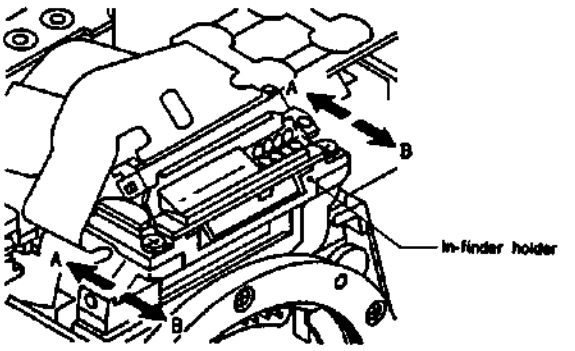
1. Check for deflection as shown in Fig. 2 and adjust by shifting in-finder in the directions A or B as shown in Fig. 3.

■Fig. 2

(Normal position is shown by thick line.)



■Fig. 3

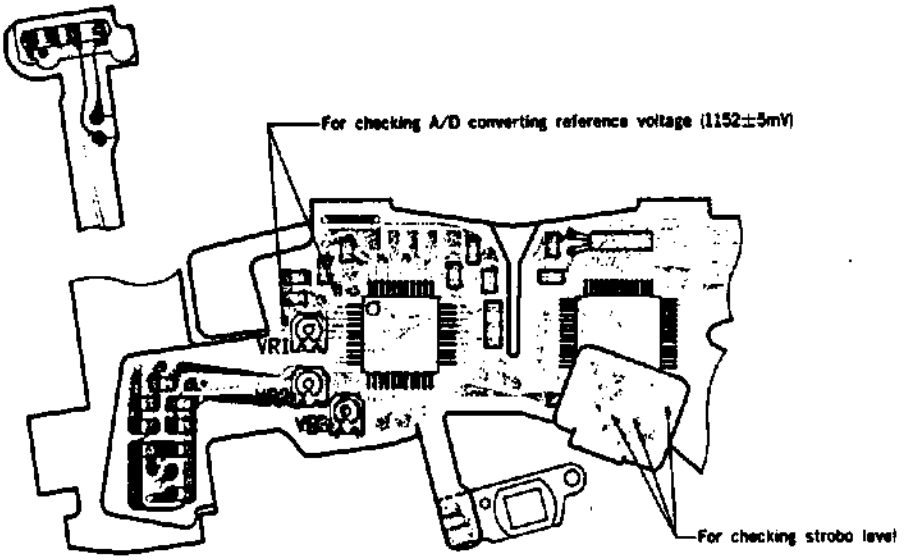


● After adjusting, tighten screws and check in-finder display position.

■ Exposure adjusting

■Position of resistor for exposure adjusting

■Fig. 1



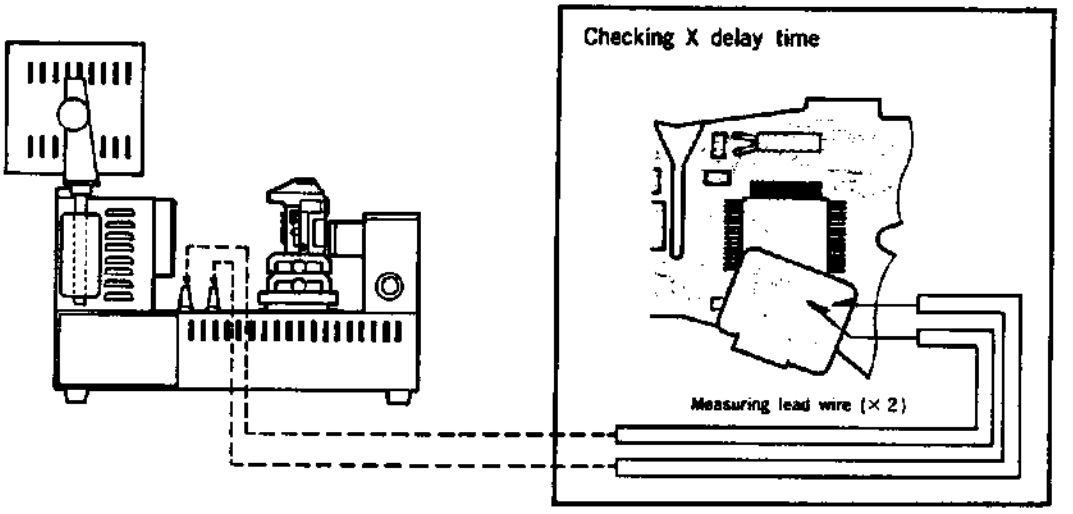
VR_1 : for adjusting A/D converting reference voltage
VR_2 : for adjusting AE level
VR_3 : for adjusting strobo level

■ Manual shutter speed, X delay time checking

■Measuring instrument : Shutter tester (MODEL S-2101, FS-1DMN4)

■Checking procedure

■Fig. 1



1. Checking manual shutter speed

Shutter speed setting	Reference value (ms)	Allowable range (ms)	Exposure unevenness	Dispersion
1/2000	0.488	0.333~0.714	The difference between maximum and minimum values among A, B, C ranges should be less than 0.6EV. The difference between A - B, B - C ranges should be less than 0.3EV	Within 0.45EV
1/1000	0.977	0.740~1.29		Within 0.3EV
1/100	10	9.0~12.3		——
1/2	500	467~536		

See Check List p. 5 for checking shutter speed setting other than above list.

2. Checking X delay time

Connect measuring lead wires (× 2) as Fig. above and check.

Shutter speed checking	Tolerance
1/100	A range·····0.3ms (min) B range·····3.0ms (min)

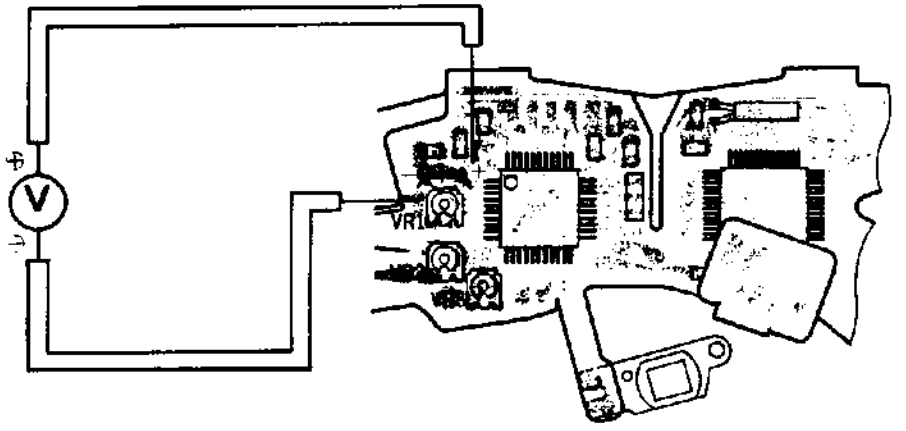
■A/D convertion reference voltage adjusting

■Measuring instrument : Digital multimeter (Type 2508, 3476, 2507)

■Adjusting procedure

1. Solder measuring lead wires (× 2).

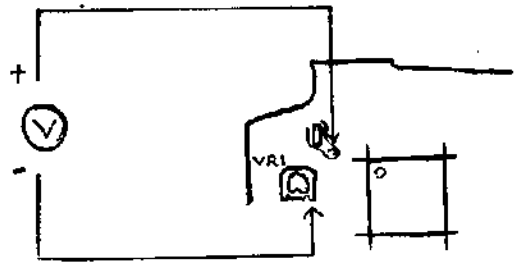
■Fig. 1



2. With main switch and measuring switch (or touch switch) turned ON, adjust by turning VR_1 so that voltage is in **1152± 5 mV**

※Allowable range varies depending on room temperature as below:

Temperature (°C)	20±2.5	25±2.5	30±2.5
Allowable range (mV)	1133± 5	1152± 5	1171± 5



CURRENT STYLE FLEX

Z072-0401-82

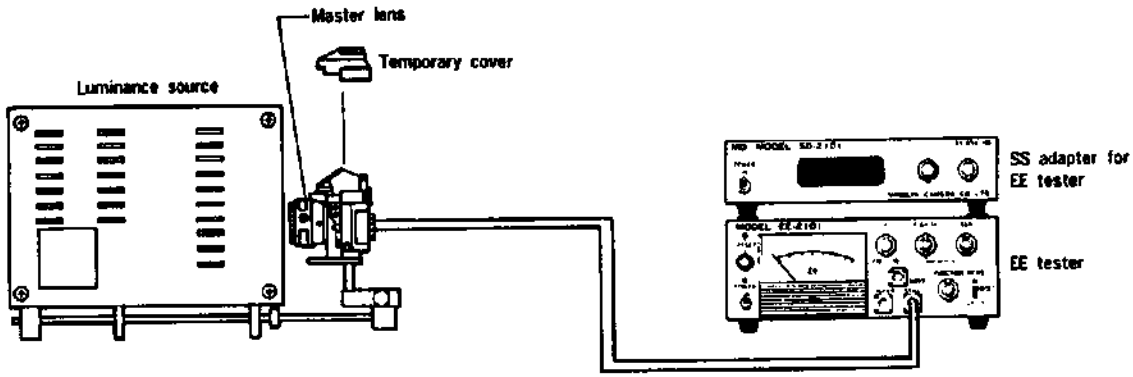
■ AE adjusting

■Measuring instruments : Luminance source (MODEL L-2101, L-222, L-223)
: EE tester (MODEL EE-2101, EE-2111)
: SS adapter for EE tester (MODEL SD-2101)
: Master lens (2072-0001-75)
: Temporary cover (2072-1302-75)

■Adjusting procedure

1. Set the camera and measuring instruments as follows.

■Fig. 1



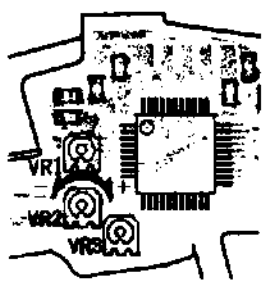
- Luminance source
  K value : 1.3
  Luminance : See Table below.
- Camera to be measured
  ISO : 100
  Exposure mode : A
  Aperture : See Table below.
  Exposure adjustment : 0
  Focus mode Sw. : M
- Master lens
  Focusing ring : ∞
- EE tester
  K value dial : 1.3
  ASA dial : 100
- SS adapter for EE tester
  F dial : 5.6
  EV dial : Same as luminance source.

2. Adjust AE level by turning VR_2 following the steps 1–3. (See Fig. 2)
Luminance and aperture in parentheses show the case of using luminance source L-222 or L-223.

Step	Luminance	Aperture	Adjusting	Checking	
			Shutter speed	Shutter speed indication	AE level allowable range
1	EV 10 (EV 11)	f : 5.6 (f : 8)	31.3ms	1/30	0±0.3EV
2	EV 6 (EV 5)	f : 5.6 (f : 4)	—	—	※ 0±0.5EV
3	EV 15 (EV 15)	f : 5.6 (f : 5.6)			

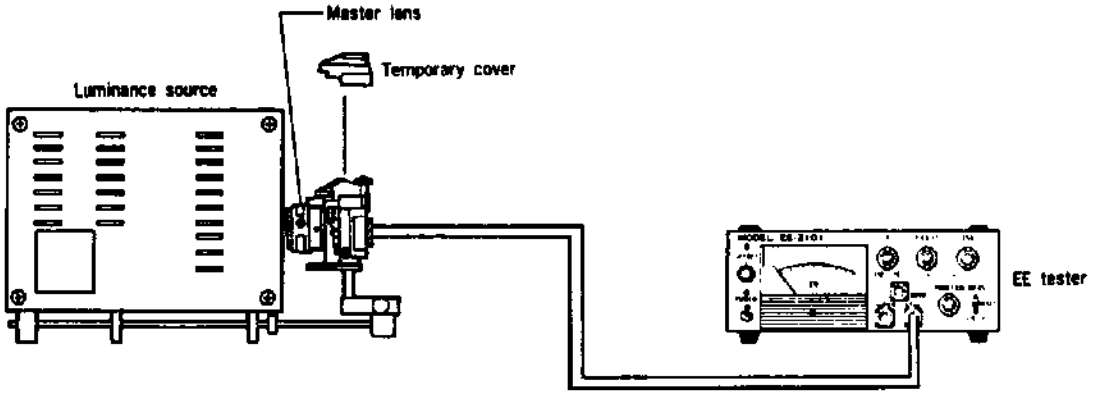
※When out of allowable range, shift AE level at EV 10(11) so that each AE level meets allowable range.
If unadjustable, see Trouble-Shooting.

■Fig. 2



3. Check AE level in P mode and S mode following the steps 1–5.

■Fig. 3



- **Luminance source**
  K value : 1.3
  Luminance : See Table below.
- **Camera**
  ISO : 100
  Exposure mode : See Table below
  Exposure adjustment : 0
  Focus mode Sw. : M
- **Master lens**
  Focusing ring : ∞
- **EE tester**
  K value dial : 1.3
  ASA dial : 100

Luminance and aperture in parentheses show the case of using luminance source L-222 or L-223.

Step	Mode	Luminance	Shutter speed setting	SD-2101 F dial setting	AE level allowable range
1	P	EV 6 (EV 5)	—	—	※ 0±0.5EV
2		EV 10 (EV 11)	—	—	
3		EV 15 (EV 15)	—	—	
4	S	EV 10 (EV 11)	1/250	F : 2	
5			1/30	F : 5.6	

※When out of allowable range, check AE level in A mode.

■ Strobo level adjusting

Use battery grip (batteries inserted) for body power source when adjusting.

■Subject : Time measurement from flash firing to firing-stop signaling.

Ⓐ Adjusting by luminance source (MODEL L-2101)

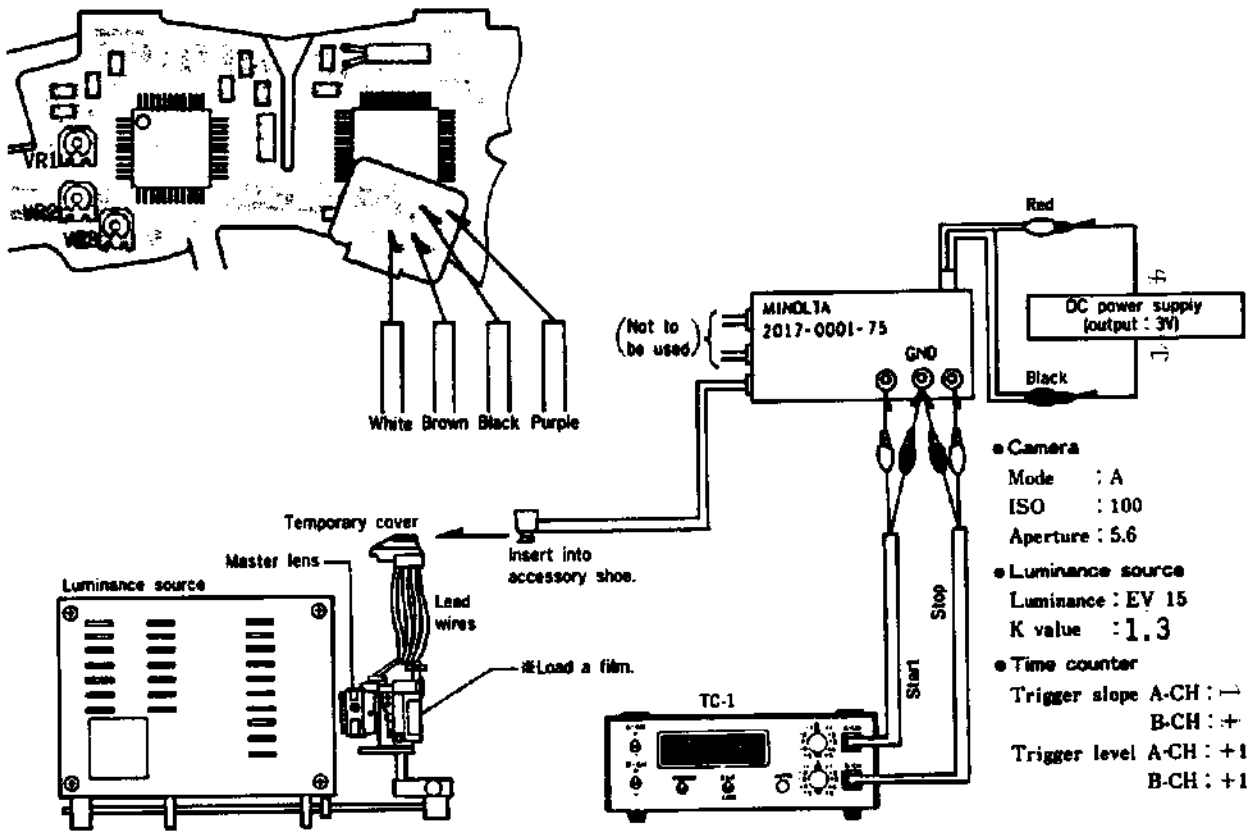
- The MODEL L-2101 luminance should be used. However, ones with color temperatures ranging from 2600K to 3000K (measured value of the Minolta color meter) at EV 15 can also be used.
- Luminance boxes with long-wavelength cut filters and lamps with cold mirrors cannot be used because of measuring errors. (Example : MODEL L-223)
- When no luminance source is used for the adjustment, employ method Ⓑ on the next page.

■Measuring instruments : Luminance source 〈MODEL L-2101〉
: Strobo level adjuster 〈2017-0001-75〉
: Film (Use Kodacolor VR 100 which has been exposed to indoor light at least one day.)
: Temporary cover 〈2072-1302-75〉
: Master lens 〈2072-0001-75〉
: DC power supply 〈MODEL 524B〉
: Time counter 〈MODEL TC-1〉·····ST-5101 is usable.

■Adjusting procedure

1. Solder the lead wires of temporary cover to camera, connect the measuring instruments as Fig. below.

■Fig. 1



2. With the shutter released, adjust by turning VR_3 so that the indication of the time counter is

0.45±0.06ms

ⒷAdjusting by strobo tester (MODEL ST-Ⅲ)

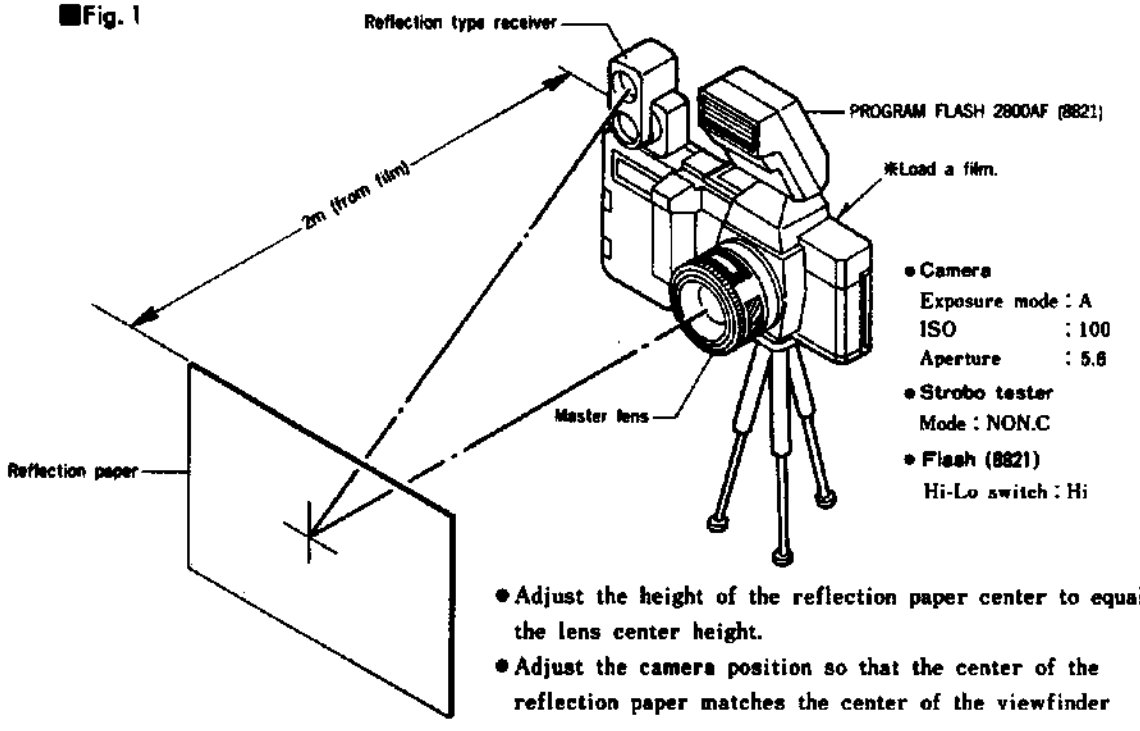
MODEL ST-Ⅰ, Ⅱ cannot be used because non-cord adjusting is impossible.

■Measuring instruments : Strobo tester (MODEL ST-Ⅲ)
: Film (※Use Kodacolor VR 100 which has been exposed to indoor light at least one day.)
: Master lens (2072-0001-75)
: Temporary cover (2072-1302-75)
: Reflection paper (1.3m×2m)……used for adjusting of Minolta AEF series.
: PROGRAM FLASH 2800AF (8821)

■Preparations

Connect the temporary cover to the body with the lead wires as shown in Fig. on the previous page. Set the measuring instruments as shown Fig. 1 below.

■Fig. 1

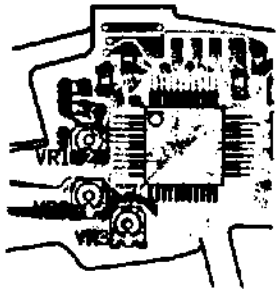


- Adjust the height of the reflection paper center to equal the lens center height.
- Adjust the camera position so that the center of the reflection paper matches the center of the viewfinder range.

■Adjusting procedure (darken the room to eliminate the influence of external light)

1. Set the flash main switch to ON, and 30 sec. or more after the pilot lamp illuminates, look into the viewfinder of the strobo tester (shown above) from near the flash, and then direct the eyepoint of the view center to the center of the reflection paper. Next release the camera shutter and read the indication of the strobo tester.
2. If the indication of the strobo tester is not within **F5.6±0.5EV**. Adjust by turning VR_3. (See Fig. 2)

■Fig. 2



■ AF checking/adjusting

■When having replaced flexible PC board-B set, mirror or mirror box, or when having received trouble with AF, re-adjust AF following [1] to [8] (p. 29—31-2). When having received trouble other then AF, re-check AF following "AF operation checking" shown below.

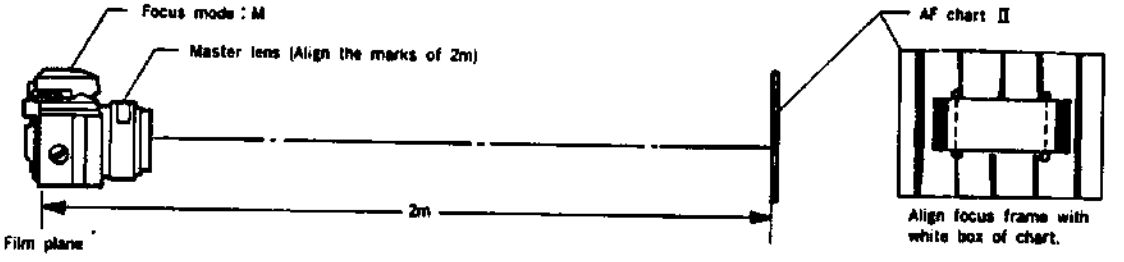
■Measuring instruments
: Camera I/O tester 〈MODEL IO-5101〉
: Master lens 〈2072-0001-75〉
: AF adjusting tool 〈2072-0002-75〉
: Tripod attachment 〈2072-0003-75〉
: AF chart-Ⅰ 〈2072-0004-75〉
: AF chart-Ⅱ 〈2072-0005-76〉
: Power supply adapter 〈2072-1221-75〉
: Flood lamp 〈color temperature : about 2800K〉
: 1000mm collimator 〈MODEL RC-Ⅲ, Ⅱ, Ⅰ〉
: Hexagon wrench (1.5)
: TORX L wrench (T8)

■ AF operation checking

Before AF checking, make sure the followings:
- Body-back and finder-back checking/adjusting have already been completed.
- External parts except bottom cover and front side cover-B (2072-1016) are on the body.

1. AF area checking

1) Set the instruments as below.



2) Turn touch switch (or metering switch) ON : low-contrast signal should be indicated (▶◀ blinking). If other focus signal than low-contrast lights, re-adjust AF following procedures [1] to [8] since it shown AF area deviation.

2. In-focus checking

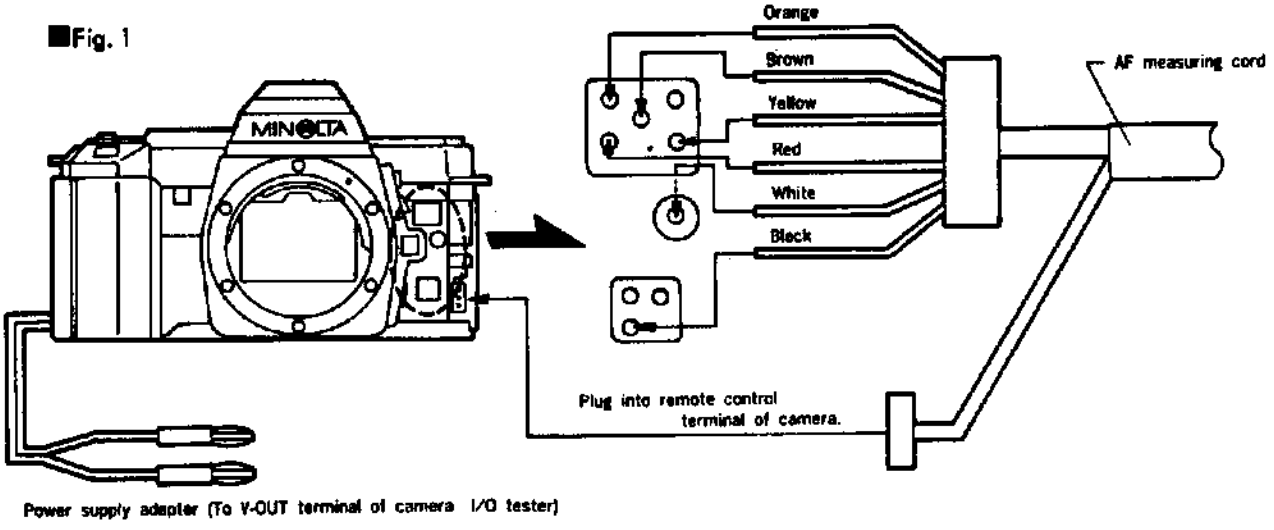
Set focus mode to AF, and check in-focus. If out of requirement, re-adjust following procedures [8].
- Center focus frame on chart of collimator, and autofocus : Lens should stop at ∞ with in-focus signal (○) lighting.
- Autofocus on subject 2—3m away that can be autofocused : In-focus signal (○) should light, and subject should clear in viewfinder.

■ Preparation for AF adjusting

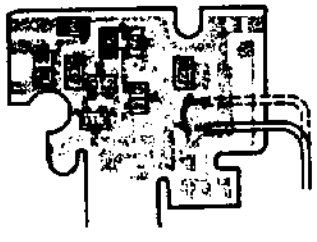
Before adjusting AF, make sure the followings:

- Body-back and finder-back checking/adjusting have already been completed.
- External parts except bottom cover and front side cover-B (2072-1016) are on the body.
- Focusing screen is standard type (2072-5805).
- If CCD image sensor module is out of position due to replacing flexible PC board-B set etc, AF adjusting screws (2072-5054×3) should be tighten fully and then loosened evenly by 3.5 turns.
- Turn VR_4 in the center position beforehand.
- Connect AF measuring code of camera I/O tester to camera. (Fig. 1)
- Unsolder SL_5 lead wire (ℓ_{14} Yellow) and solder it to GND. (Fig. 2)

■Fig. 1



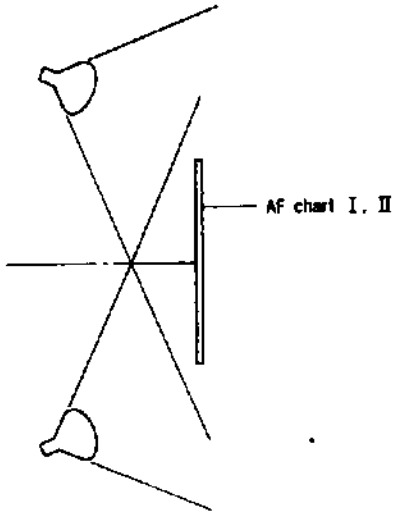
■Fig. 2



- Give light to AF chart.

For adjusting AF [1]-[8], give light to AF chart (Fig. 3).

■Fig. 3



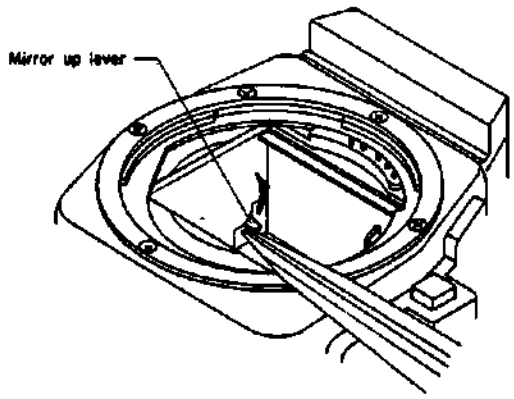
Light up AF chart evenly BV 3 or more) with flood lamp used.
Color temperature of flood lamp : 2800K (approx.)
Measure the light of flood light on AF chart and check that the color temperature is about 2800°K.
Be careful that AF chart is not affected by other light source than flood lamp, such as fluorescent light, sunlight, etc., as much as possible.

1 AF area adjusting

·····Adjustment to center AF area on focus frame

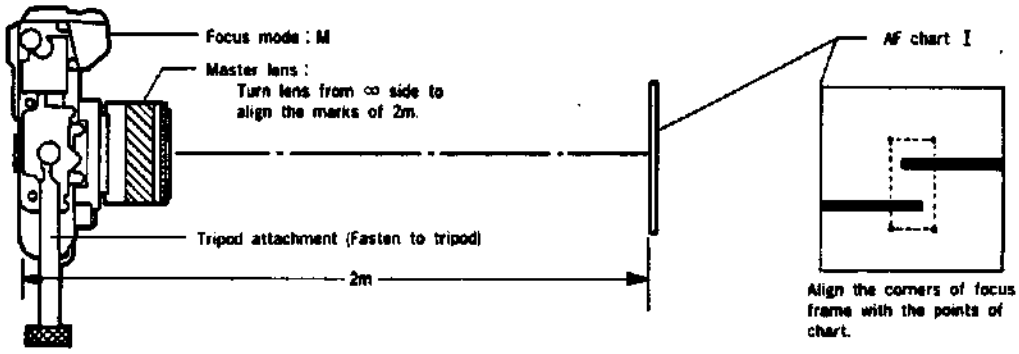
■Adjusting procedure

1. Keep shutter open.

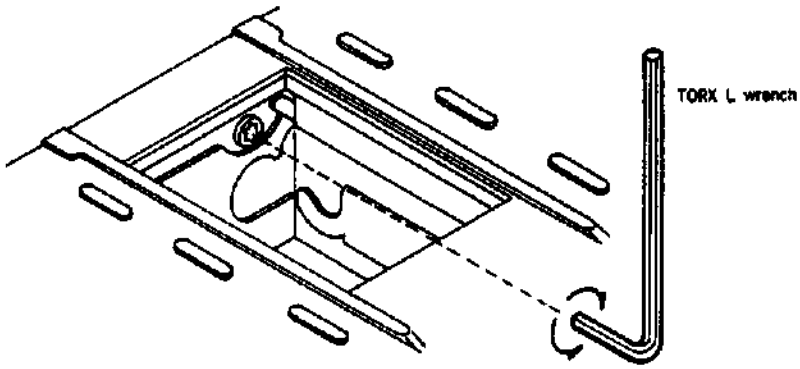


Lifting mirror up with tweezers, push mirror-up lever in the direction of arrow to keep shutter open. When shutter open, do not push mirror-up lever any longer; otherwise, M_1 will run idle.

2. Set the instruments as below.


Focus mode : M
Master lens :
Turn lens from ∞ side to align the marks of 2m.
Tripod attachment (Fasten to tripod)
2m
AF chart I
Align the corners of focus frame with the points of chart.

3. Push ◫ key and then [ENT] key of camera I/O tester.
4. Adjust position of sub mirror so that camera I/O tester shows [1.0±0.1] in LCD.

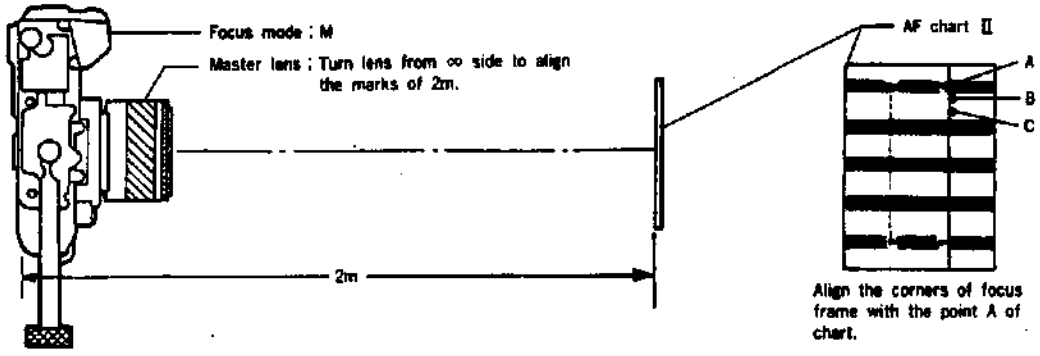


5. After the adjustment, push [RESTART] key of camera I/O tester.
6. Turn OFF the V-OUT of camera I/O tester for 2nd shutter-blade traveling.
   (After 2nd shutter-blade travels, reset V-OUT to 6V.)

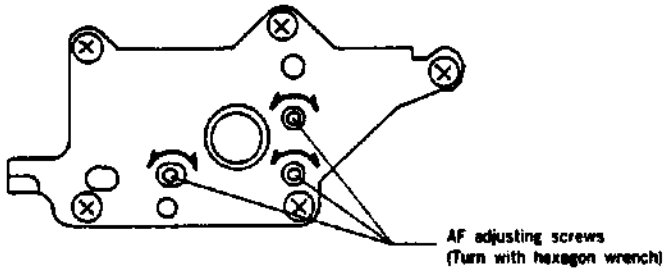
[2] MZ adjusting ·····Adjustment of CCD image sensor positioning

■Adjusting procedure

1. Set the instruments as below.


Focus mode : M
Master lens : Turn lens from ∞ side to align the marks of 2m.
AF chart II
A
B
C
2m
Align the corners of focus frame with the point A of chart.

2. Push [2] key and then [ENT] key of camera I/O tester.
3. Turn AF adjusting screws (×3) evenly so that camera I/O tester shows [10±30] in LCD.



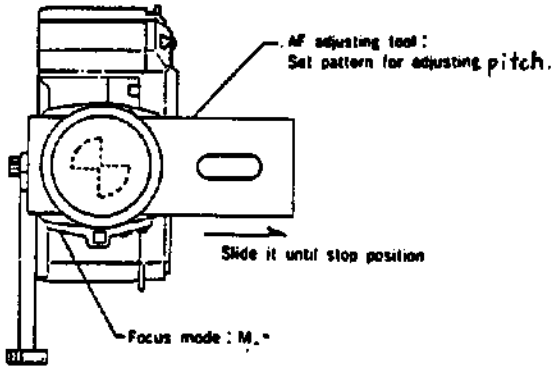
4. After the adjustment, push [RESTART] key of camera I/O tester.

[3] Pitch adjusting ·····Adjustment of CCD image sensor tilting

Face the flood lamp to the camera (only for checking/adjusting of Pitch, Yaw).

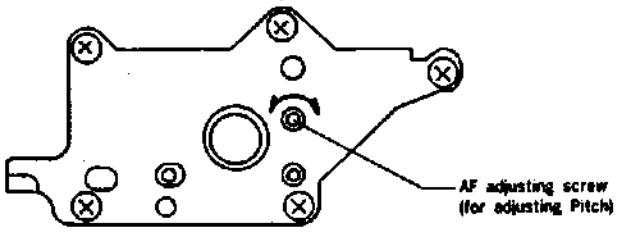
■Adjusting procedure

1. Set the instruments as below.



2. Push [3] key and then [ENT] key of camera I/O tester.

3. Turn AF adjusting screw (for adjusting Pitch) so that camera I/O tester shows [1.0±0.1] in LCD.



4. After the adjustment, push [RESTART] key of camera I/O tester.

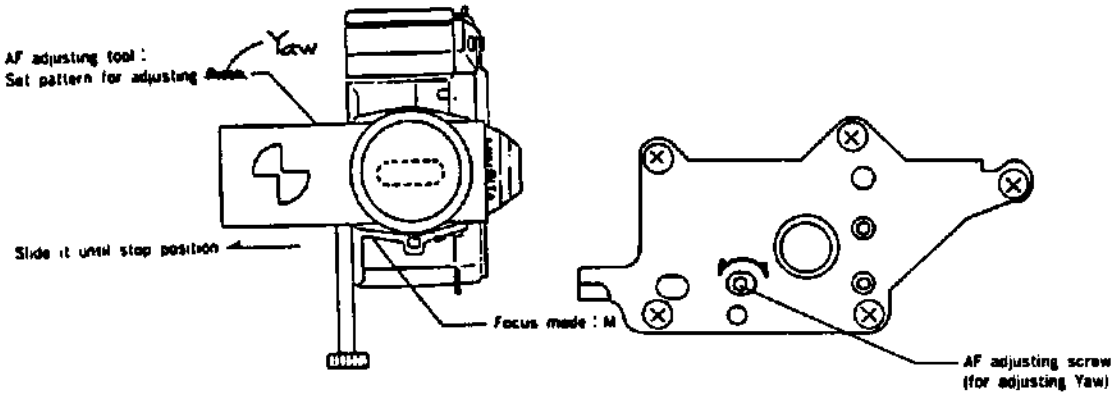
[3] Yaw adjusting

·····Adjustment of CCD image sensor tilting

Face the flood lamp to the camera (Only for checking/adjusting of Pitch, Yaw).

■Adjusting procedure

1. Set the instruments as below.



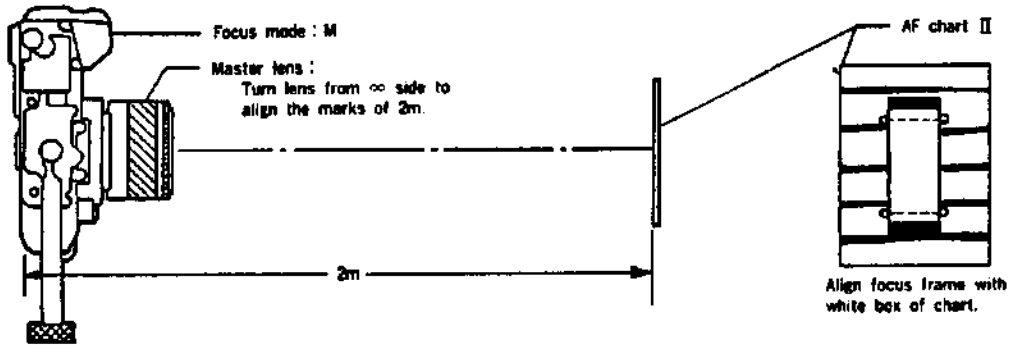
2. Push [4] key and then [ENT] key of camera I/O tester.
3. Turn AF adjusting screw (for adjusting Yaw) so that camera I/O tester shows [1.0±0.15] in LCD.
4. After the adjustment, push [RESTART] key of camera I/O tester.

[5] Pitch/Yaw checking

Check Pitch and Yaw following procedures [3], [4]. If out of [Pitch : 1.0±0.1] [Yaw : 1.0±0.15], re-adjust and re-check Pitch/Yaw following procedures from [3] or [4].

[6] AF area checking

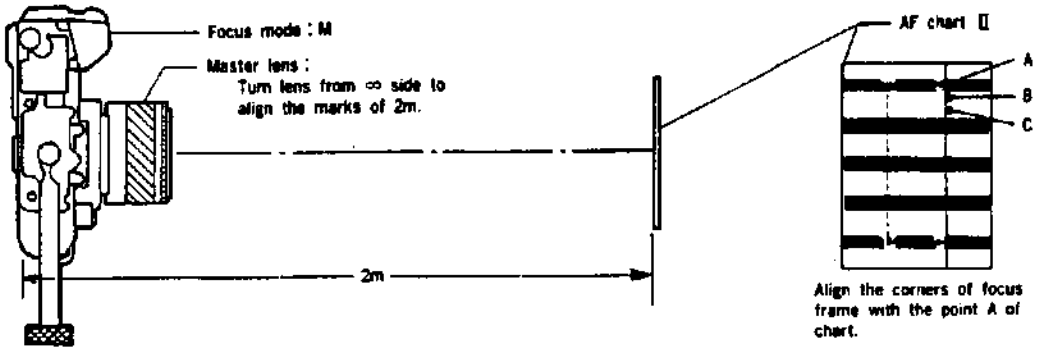
1. Set the instruments as below. (Disconnect AF measuring cord from AF signal adapter.)



2. Turn touch switch (or metering switch) ON : Low-contrast signal should be indicated (⋈ blinking). If not, re-adjust and re-check AF area, following procedures from [1].

[7] MZ checking

1. Set the instruments as below.



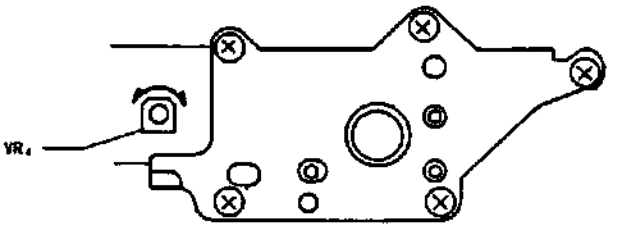
2. Push [2] key and then [ENT] key of camera I/O tester.
3. If camera I/O tester does not show [30±200] in LCD, re-adjust and re-check MZ following procedures from [2].

[8] EZ adjusting

Set the instruments as shown in [7].

■Adjusting procedure

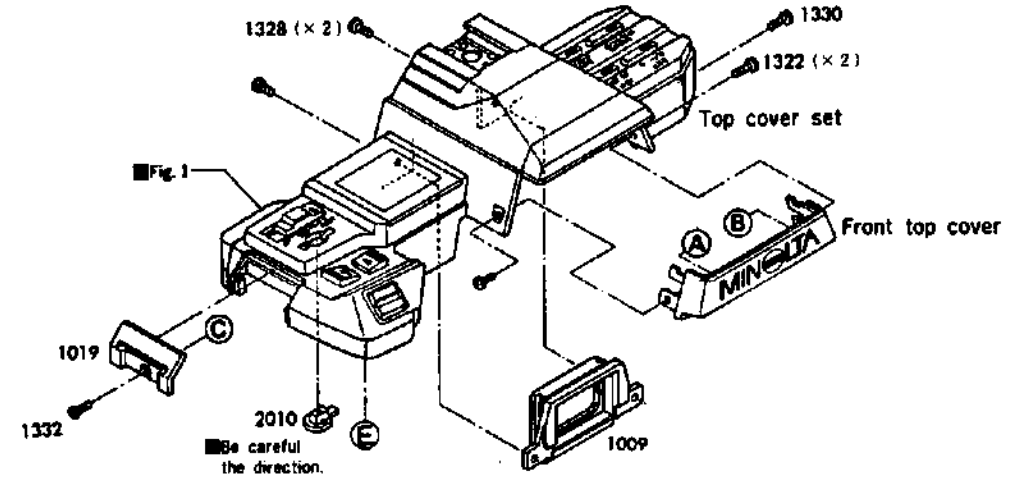
1. Push [2] key and then [ENT] key of camera I/O tester.
2. Shifting focus frame from portion A → B → C, read EZ value in LCD of camera I/O tester. (Since EZ value somewhat varies, average the EZ.)
3. Find intermediate EZ value, and align focus frame with relevant portion (A, B or C).
4. Turn VR_4 so that camera I/O tester shows [30±10] in LCD.

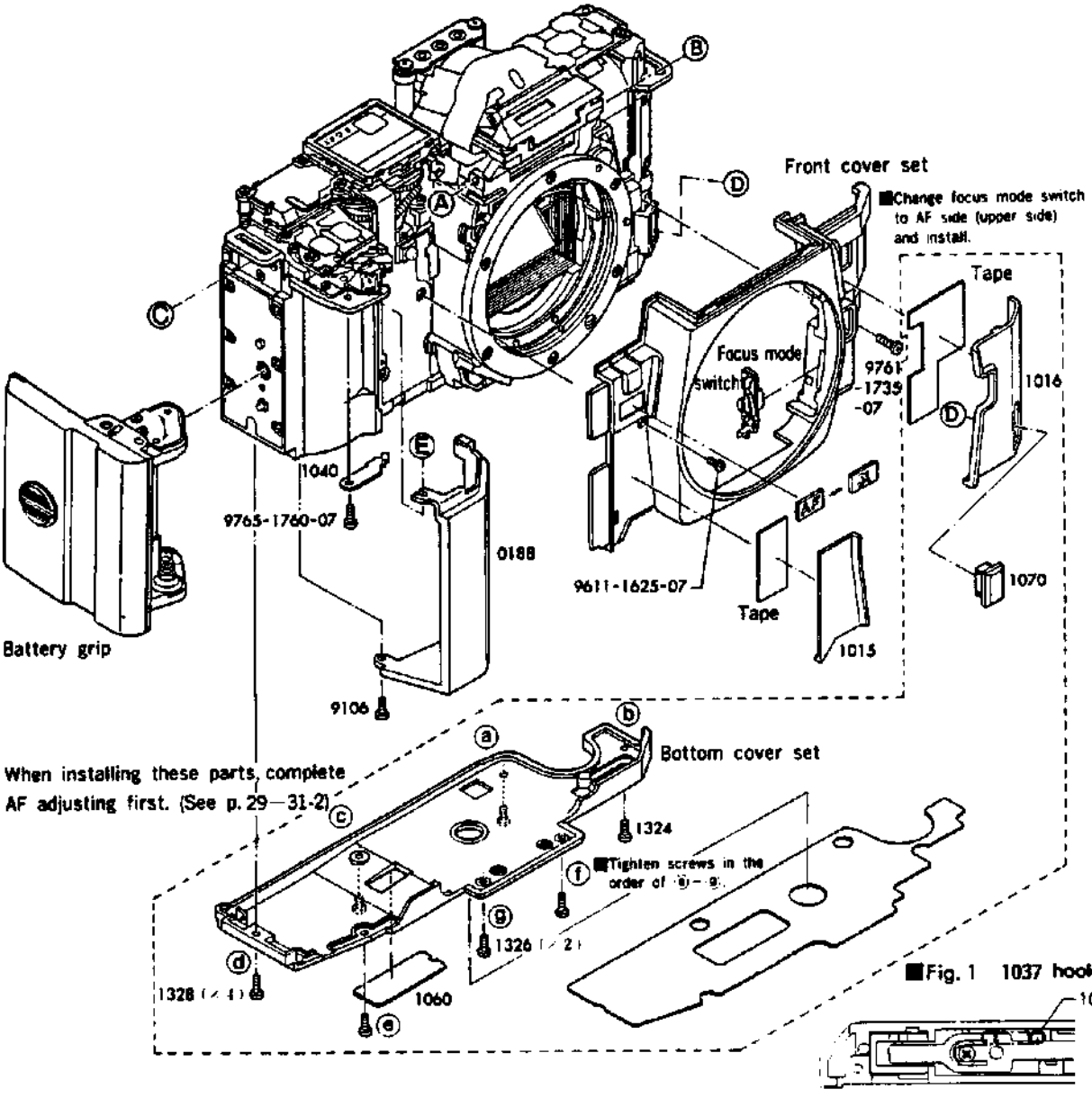


5. After the adjustment push [RESTART] key of camera I/O tester.
6. Checking after adjusting
   Autofocus on subject 2—3m away that can be autofocused : In-focus signal (○) should light, and subject should clear in viewfinder.
7. Re-solder SL_3 lead wire (ℓ_{14} Yellow) to the original position. (Refer to p. 28)

7 External parts (completion)

■When installing bottom cover-B (1016), complete AF adjusting first. (See p. 29—31-2)





■ Measuring instruments

■Luminance source (MODEL L-2101, *L-222, *L-223)
■EE tester (MODEL EE-2101, EE-2111)
■SS adaptor for EE tester (MODEL SD-2101)
■Shutter tester (MODEL S-2101, *FS-1DMN4)
■Time counter (MODEL TC-1)
■Digital multimeter (Type 2508, *3476, *2507)

NEW Camera I/O tester (MODEL IO-5101)
■Strobo tester (MODEL ST-Ⅲ)
■1000 mm collimator (MODEL RC-1000 Ⅲ, *Ⅱ, *Ⅰ)
■DC power supply (MODEL 524B, *E-1, *E-2)

(Items marked "*" have been discontinued)

■ Tools used in common

■Tool No. 2017-0001-75
Strobo level adjuster

■Body back gage

■Flat plate (for 2005)

■Dial gauge

■Reflection paper
(1.3m × 2m)
···Seamless paper #22
(Supprior make)

■Hexagon wrench (1.5)

■TORX L wrench (T8)

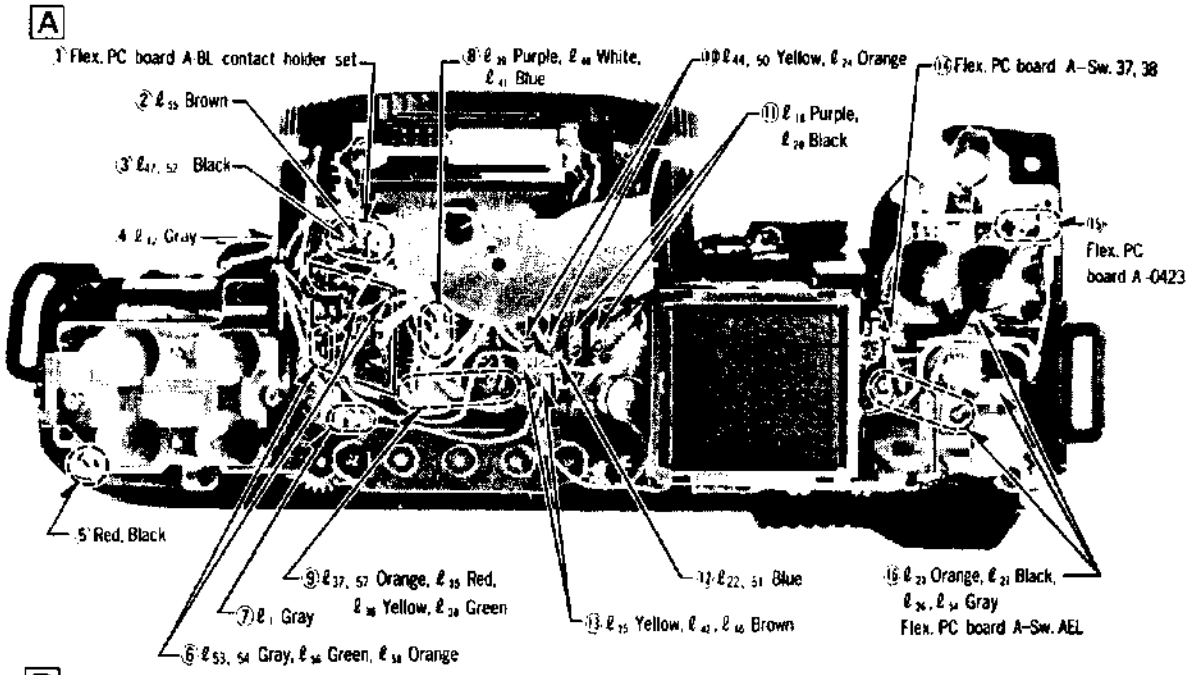
■ Subsidiary materials

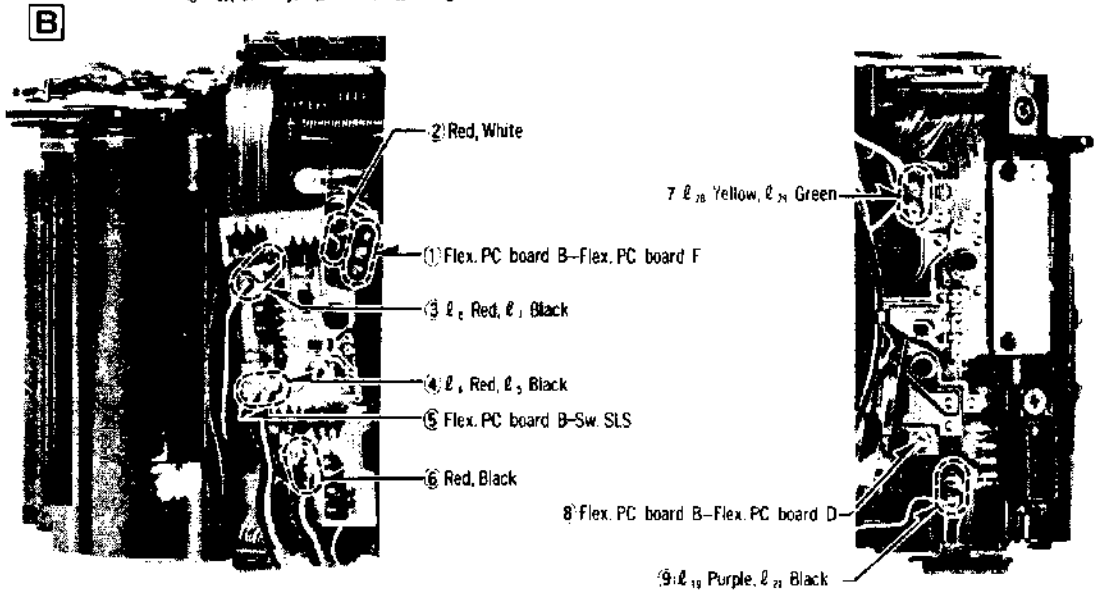
■Grease
- G-50
- G-60
- G-80

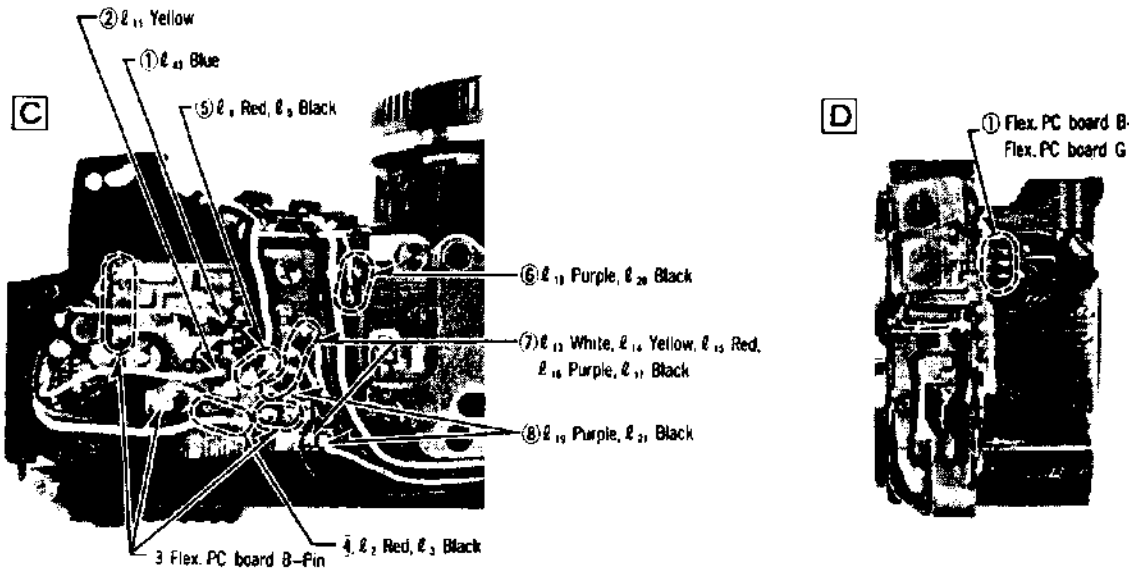
■Oil
- O-10

■Adhesives
- B-10
- B-20
- B-50
- B-60
- B-70

■Cleaner
- FLONSOLVE


A
1 Flex. PC board A-BL contact holder set
2 ℓ 55 Brown
3 ℓ 47, 52 Black
4 ℓ 17 Gray
5 Red, Black
6 ℓ 53, 54 Gray, ℓ 56 Green, ℓ 58 Orange
7 ℓ 1 Gray
8 ℓ 36 Purple, ℓ 46 White, ℓ 41 Blue
9 ℓ 37, 57 Orange, ℓ 35 Red, ℓ 38 Yellow, ℓ 39 Green
10 ℓ 44, 50 Yellow, ℓ 24 Orange
11 ℓ 18 Purple, ℓ 20 Black
12 ℓ 22, 51 Blue
13 ℓ 25 Yellow, ℓ 42, ℓ 45 Brown
14 Flex. PC board A-Sw. 37, 38
15 Flex. PC board A-0423
16 ℓ 23 Orange, ℓ 21 Black, ℓ 26, ℓ 34 Gray
Flex. PC board A-Sw. AEL


B
2 Red, White
1 Flex. PC board B-Flex. PC board F
3 ℓ 2 Red, ℓ 1 Black
4 ℓ 4 Red, ℓ 5 Black
5 Flex. PC board B-Sw. SLS
6 Red, Black
7 ℓ 28 Yellow, ℓ 29 Green
8 Flex. PC board B-Flex. PC board D
9 ℓ 19 Purple, ℓ 21 Black


C
2 ℓ 11 Yellow
1 ℓ 43 Blue
5 ℓ 6 Red, ℓ 9 Black
6 ℓ 18 Purple, ℓ 20 Black
7 ℓ 13 White, ℓ 14 Yellow, ℓ 15 Red, ℓ 16 Purple, ℓ 17 Black
8 ℓ 19 Purple, ℓ 21 Black
4 ℓ 7 Red, ℓ 3 Black
3 Flex. PC board B-Pin
D
1 Flex. PC board B-Flex. PC board G

■ Replacing procedure

※This procedure begins with external parts removed. For disassembly of external parts, see p. 32.

■ INDEX

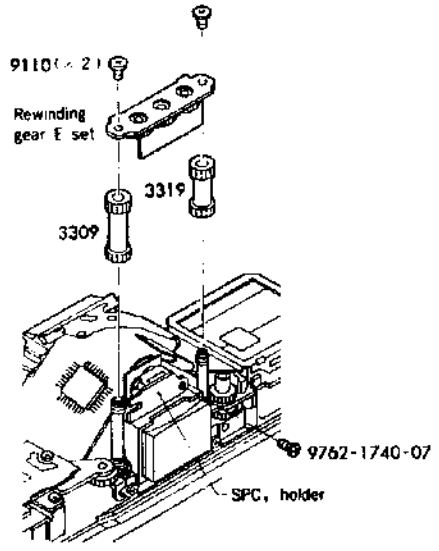
1. Flexible PC board A set replacing ····· P. 36~43
2. Winding base plate set replacing ····· P. 44~48
3. Motor set replacing ····· P. 49~52
4. Mirror box set removing ····· P. 52~54
5. Mirror box set installing ····· P. 55~58
6. Flexible PC board B set replacing ····· P. 59
7. AF drive set replacing ····· P. 60~62
8. Shutter set replacing ····· P. 63
9. Mirror replacing ····· P. 64~65

1. Flexible PC board A set replacing

[1] Unsoldering

- Unsolder ①~⑯ in p. 36 [A].
- Unsolder ⑦~⑨ in p. 36 [B].

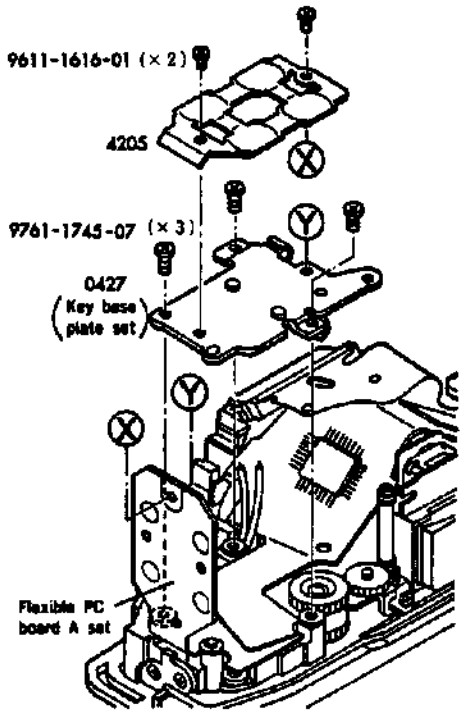
[2] Rewinding gear E set, SPC, holder removing



1. Remove two screws (9110).
   Remove rewinding gear E set, 3309, 3319.
2. Remove screw (9762-1740-07).
   Remove SPC, holder from pentaprism holder.

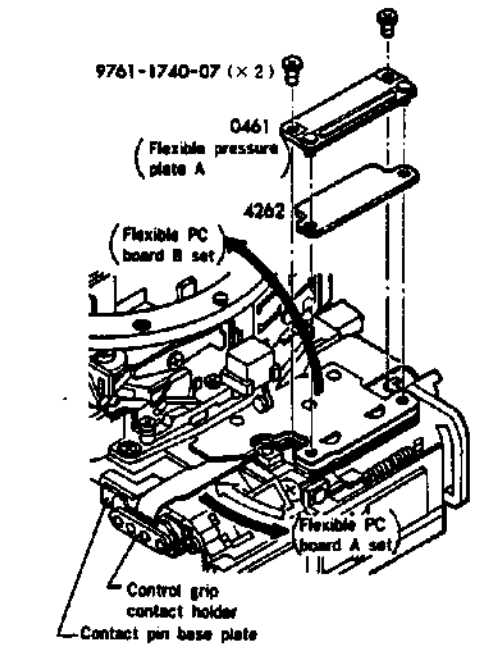
(Continued on next page)

3 Key base plate set removing



1. Remove two screws (9611-1616-01) and 4205.
2. Remove three screws (9761-1745-07) and 0427.

4 Flexible pressure plate A removing (Three layers of PC boards)

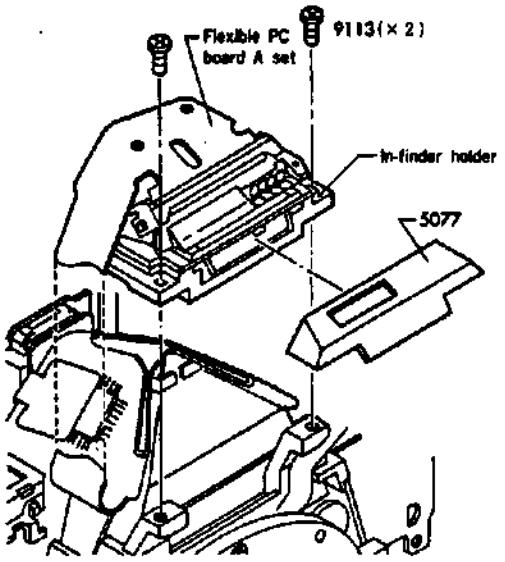


1. Remove two screws (9761-1740-07), 0461 and 4262.
2. Detach control grip contact holder of flexible PC board A from contact pin base plate. (attached with double-faced tape).
3. Lifting flexible PC board B up, take flexible PC board A out in the direction of arrow (➡).

●

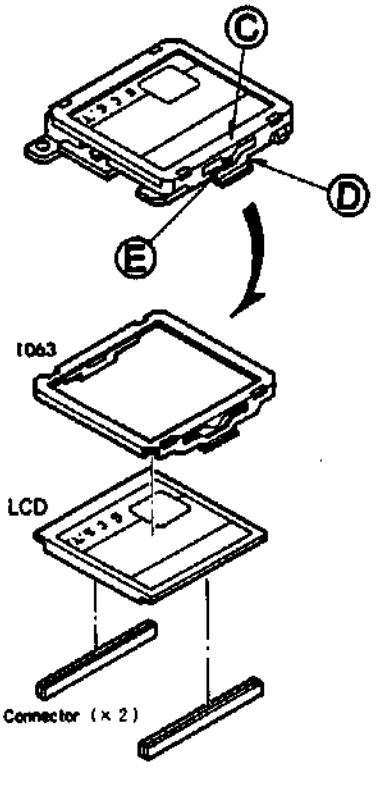
(Continued on next page)

5 In-finder holder removing

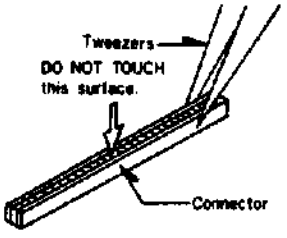


1. Remove 5077 (attached with double-faced tape).
2. Remove two screws (9113) and in-finder holder.

6 LCD removing

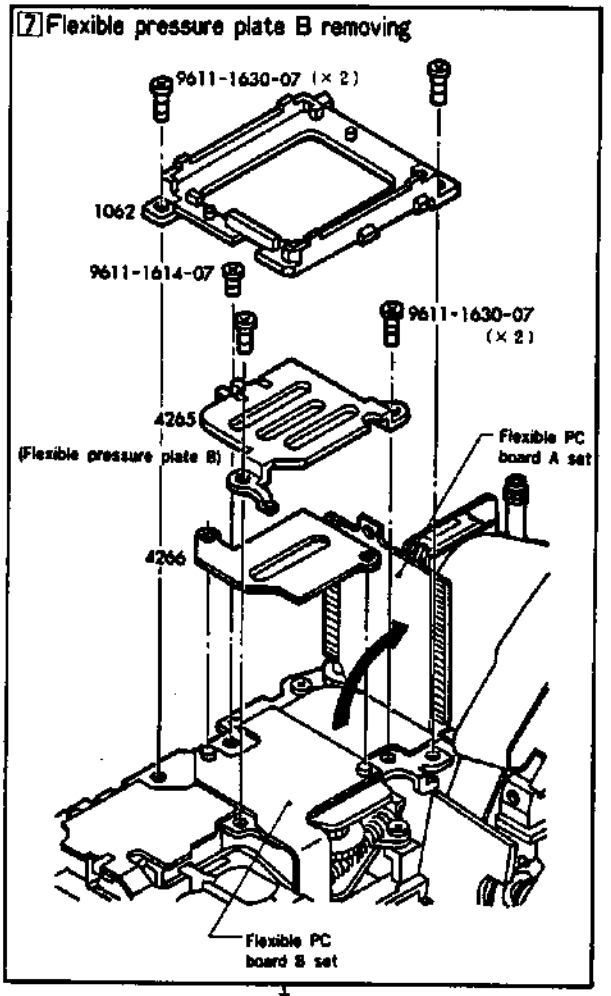


1. To disengage Ⓔ from the pawl..... while pressing Ⓒ, pick Ⓓ with tweezers and disengage it from the pawl.
2. Disengage the other side in the same way.
3. Remove LCD, two connectors.
   Keep LCD and connectors in lens cleaning tissue.
   Precaution: DO NOT TOUCH the connectors with fingers.
   Use tweezers as below:



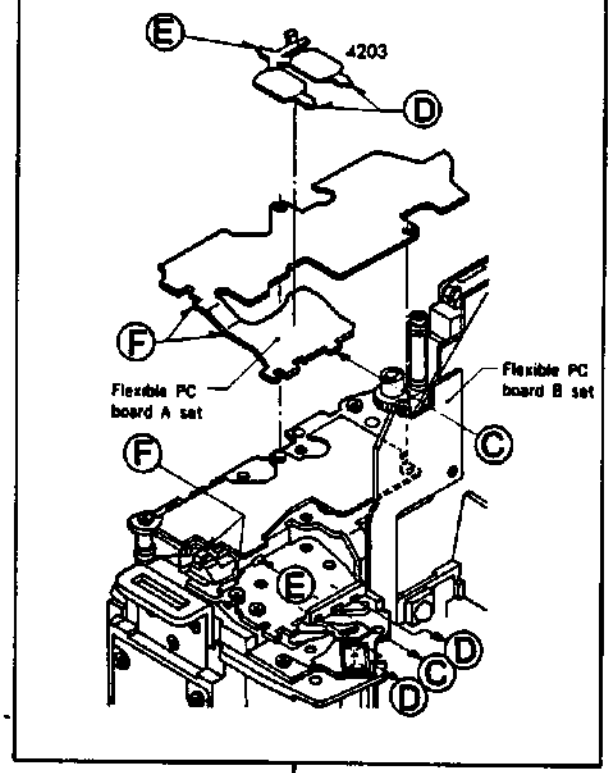
(Continued on next page)

7 Flexible pressure plate B removing



1. Remove two screws (9611-1630-07) and 1062.
2. Turning flexible PC board A up in the direction of arrow, remove three screws (9611-1630-07×2) (9611-1614-07), 4265 and 4266.

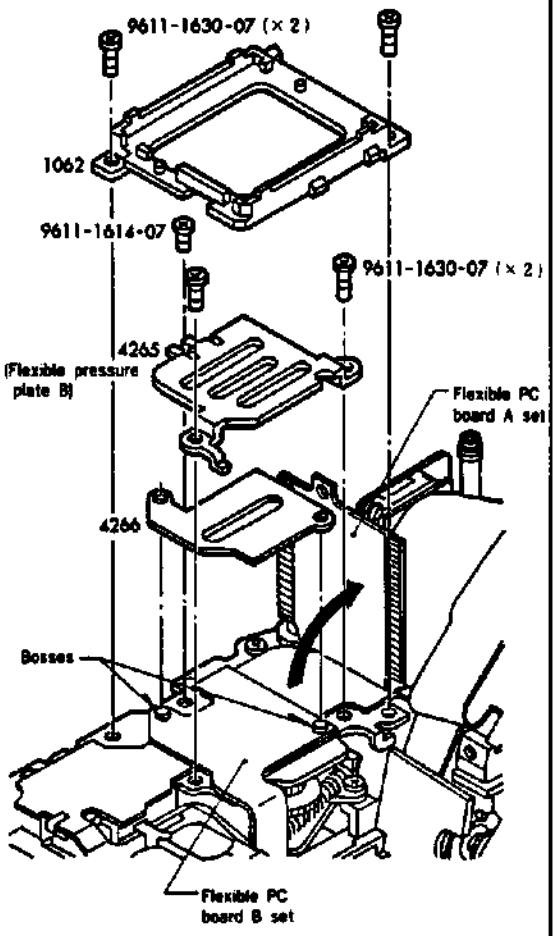
8 Flexible PC board A set replacing



1. Remove 4203, by disengaging 4203 Ⓓ, Ⓔ from winding base plate.
2. Remove flexible PC board A set, by disengaging Ⓒ first, and then Ⓕ from winding base plate.
3. Install new flexible PC board A set, by engaging Ⓕ and then Ⓒ.
4. Engage 4203 Ⓓ, Ⓔ with winding base plate.

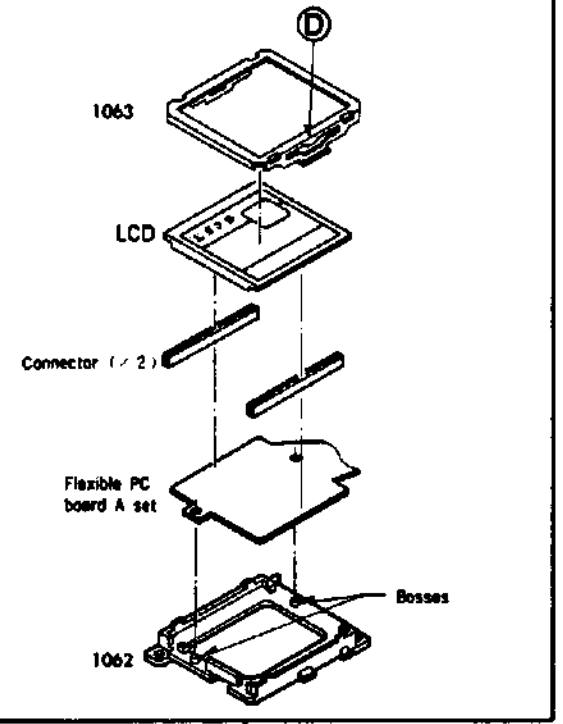
(Continued on next page)

9 Flexible PC board B set installing

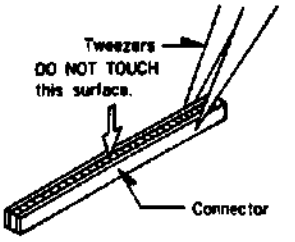


1. Clean contact surfaces of flexible PC boards A and B.
2. Turning flexible PC board A up in the direction of arrow, fit flexible PC boards A and B, and 4266, 4265 (in this order) onto the bosses of winding base plate.
   Secure with three screws (9611-1630-07×2) (9611-1614-07).
3. Install 1062 with two screws (9611-1630-07).

10 LCD installing



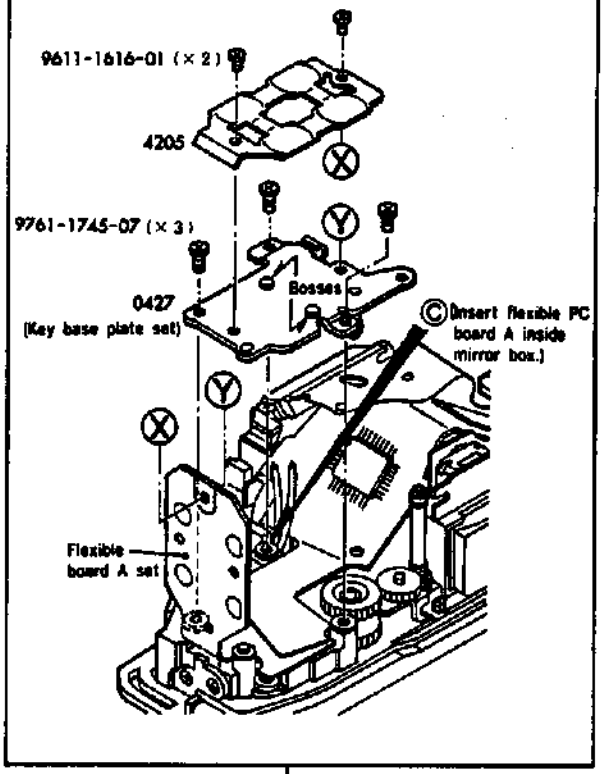
1. Clean contact surface of flexible PC board A and then fit it onto the bosses of 1062.
2. Fit two connectors into 1062.
   Precaution: DO NOT TOUCH the connectors with fingers.
   Use tweezers as below:



3. Place LCD (should be cleaned with Flonsolve, if dirty) on the connectors. While pressing Ⓓ, fit 1063 into 1062.
4. Fit the other side in the same way.

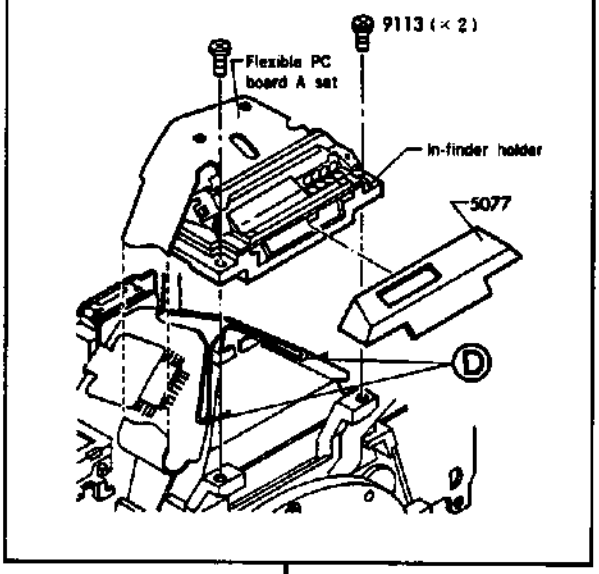
(Continued on next page)

11 Key base plate set installing



1. Insert Ⓒ of flexible PC board A as shown. (i.e. inside mirror box)
2. Secure key base plate set (0427) with three screws (9761-1745-07).
3. Fit flexible PC board A onto the 0427 bosses, and then install 4205 with two screws (9611-1616-01).

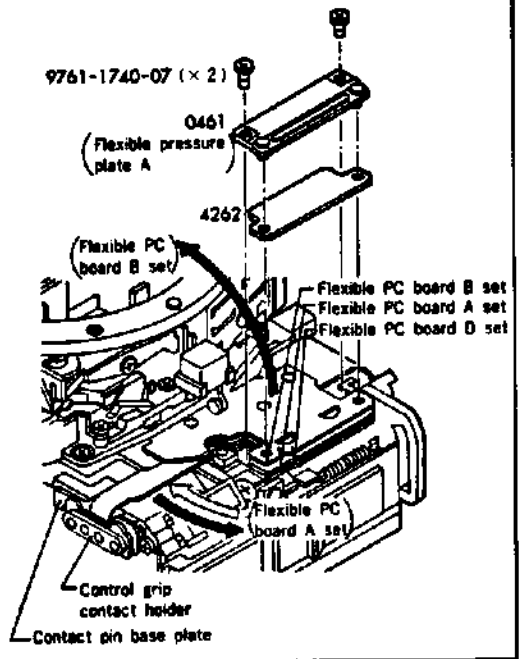
12 In-finder holder installing



1. Holding Ⓓ of flexible PC board A as shown, install in-finder holder with two screws (9113).
   ※After installing, perform "In-finder display position adjusting" on p. 19.
2. Attach 5077 with double-faced tape.

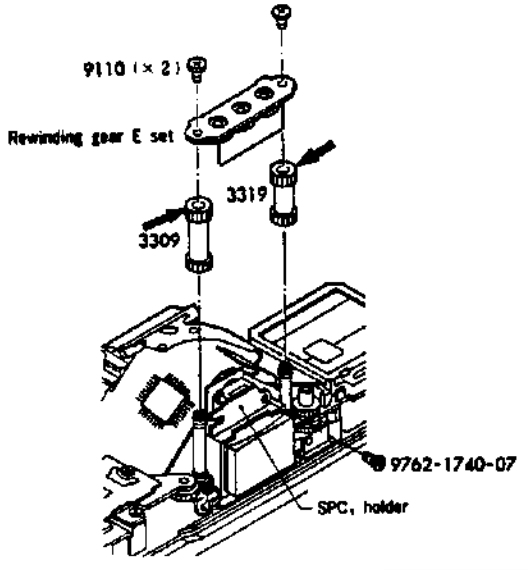
(Continued on next page)

13 Flexible pressure plate A installing
(Three layers of PC boards)



1. Clean contact surfaces of flexible PC boards. Place flexible PC board-D, -A, -B, 4262 and 4261 (in this order) in position. Secure them with two screws (9761-1740-07).
2. Attach control grip contact holder (on flexible PC board A) to contact pin base plate. With double-faced tape.

14 SPC, holder, rewinding gear E set installing



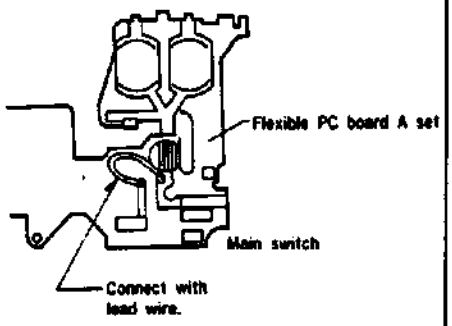
1. Install SPC, holder with screw (9762-1740-07).
2. Place 3309, 3319 over the axes.
3. Pushing 3309 and 3319 inside (i.e toward eyepiece), place rewinding gear E set in position. And then tighten two screws (9110).

15 Soldering

- Solder ①~⑯ in p. 36 A.
- Solder ⑦~⑨ in p. 36 B.

(Continued on next page)

■ Operation checking



●Check* with main switch connected by lead wire.

※Indicating, releasing, winding, and AF operation.

■ Lead wires arranging

● Arrange lead wires following p. 14, 15.

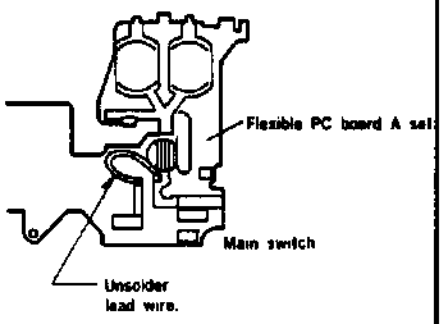
■ Adjusting

- ● A/D conversion reference voltage (1152mV) adjusting (See p. 22)
- ● AE adjusting (See p. 23)
- ● Strobo level adjusting (See p. 25)

■ Checking

- ● Body back checking (See p. 17)
- ● Finder back checking (See p. 18)
- ● Manual shutter speed, X delay time checking (See p. 21)

■ Main switch checking



●Remove the lead wire which has been soldered for operation checking.

■ Checking

● AF checking (See p. 27)

16 External parts assembling (See p. 32)

● After assembly is completed, check following Check List.

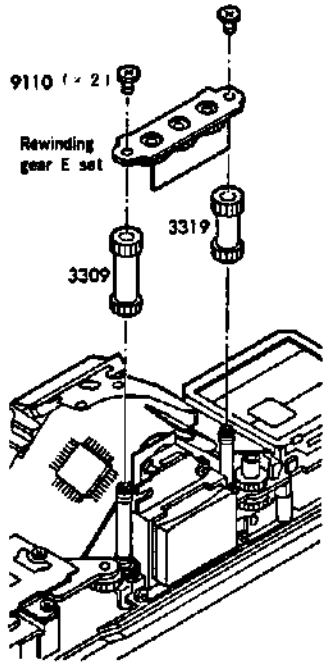
2. Winding base plate set replacing

※Work with back cover open or removed.

1 Unsoldering

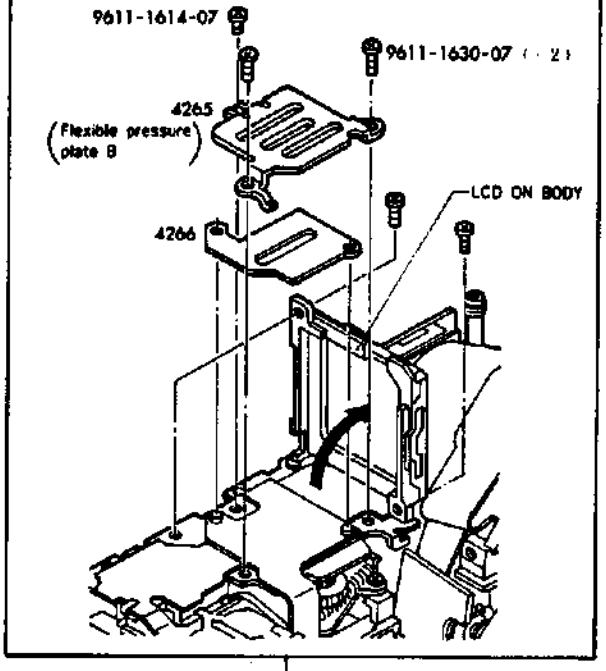
• Unsolder ⑬~⑯ in p. 36 A.

2 Rewinding gear E set removing



1. Remove two screws (9110), rewinding gear E set, 3309, and 3319.

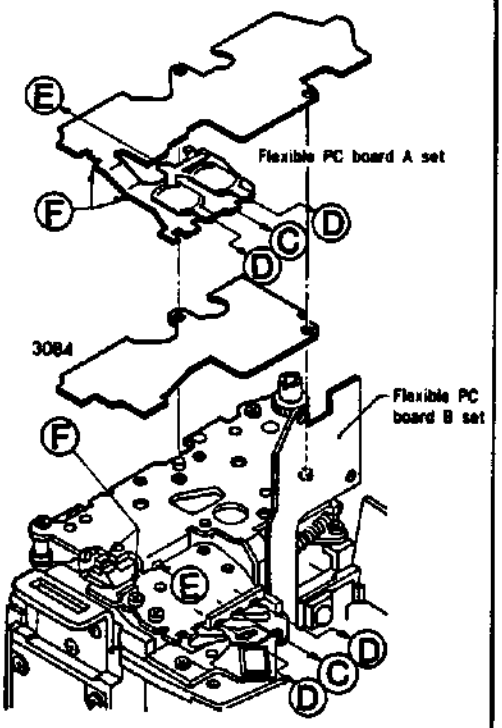
3 Flexible pressure plate B removing



1. Remove two screws (9611-1630-07) and lift body-LCD in the direction of arrow. (DO NOT MAKE ANY SCRATCHES on body-LCD.)
2. Holding as they are, remove three screws (9611-1630-07 × 2)(9611-1614-07), 4265, and 4266.

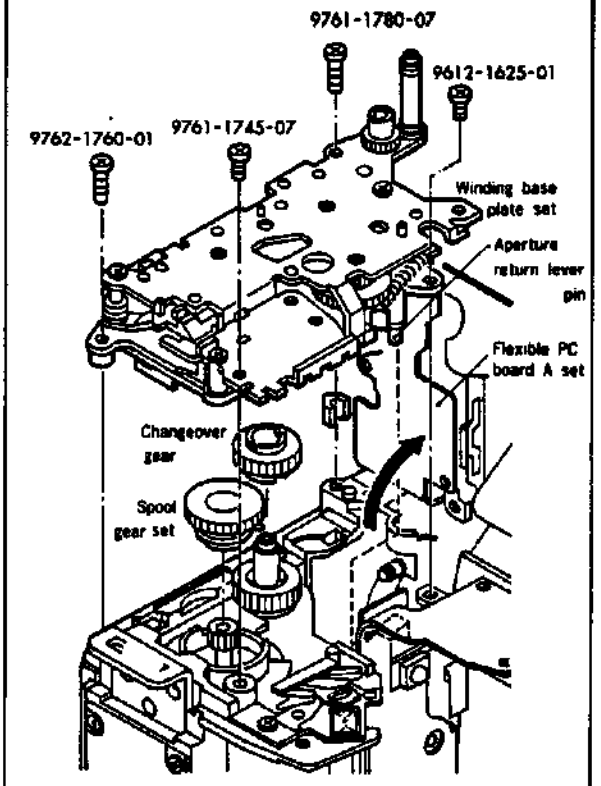
(Continued on next page)

4 Flexible PC board A set disengaging

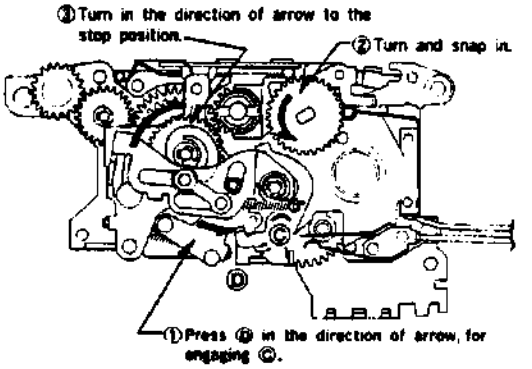


1. Disengaging Ⓒ−Ⓔ, lift flexible PC board A up.
2. Remove 3084.

5 Winding base plate set replacing



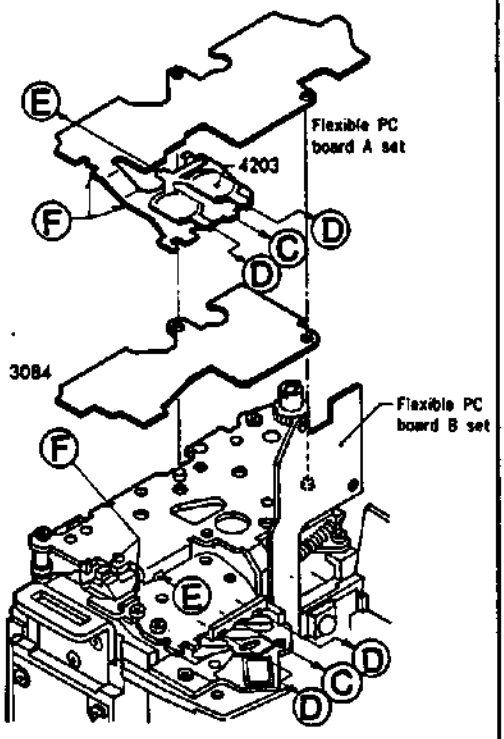
1. Turning flexible PC board A up in the direction of arrow, remove four screws (9612-1625-01, 9761-1745-07 9761-1780-07, 9762-1760-01) and winding base plate set.
   - Repair, replace or adjust the winding base plate set following procedure on p. 3.
2. Keep winding base plate set in the state of winding completion. (See below)



3. Make sure spool gear set and changeover gear are set on body.
4. Turn flexible PC board A up in the direction of arrow.
5. Install winding base plate set with four screws (9612-1625-01, 9761-1745-07, 9761-1780-07, 9762-1760-01) so that aperture return lever pin. Will be in position shown by dotted line.

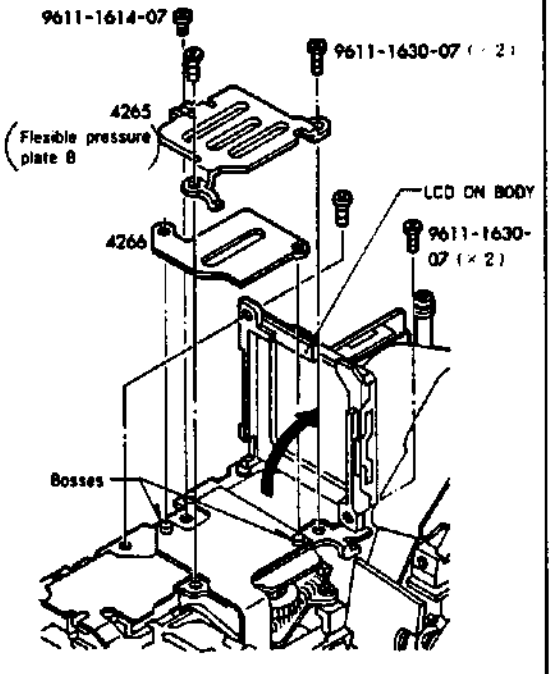
(Continued on next page)

6 Flexble PC board A set installing



1. Install 3084.
2. Fit flexible PC board A into winding base plate in the order Ⓕ, Ⓒ.
3. And then insert 4203 Ⓓ and Ⓔ in position.

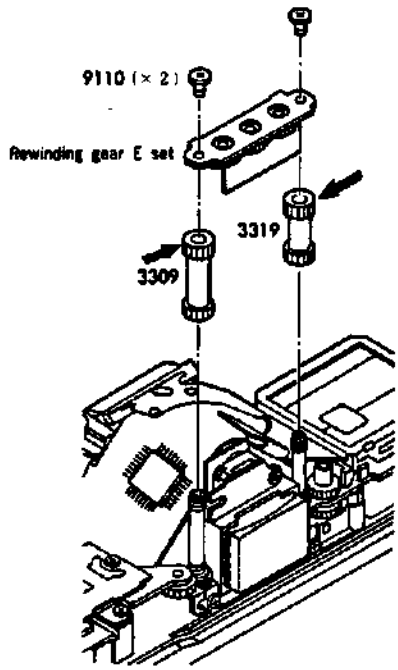
7 Flexible pressure plate B installing



1. Lifting body-LCD up in the direction of arrow, install the parts. (Pay attention NOT TO MAKE ANY SCRATCHES on body-LCD.)
   (1)Clean contact surfaces of flexible PC boards A and B. Fit them onto the bosses of winding base plate.
   (2)Fit 4266 onto the bosses of winding base plate. Place 4265 in position and then tighten three screws (9611-1630-07 × 2)(9611-1614-07).
2. Install body-LCD with two screws (9611-1630-07).

(Continued on next page)

8 Rewind gear E set installing

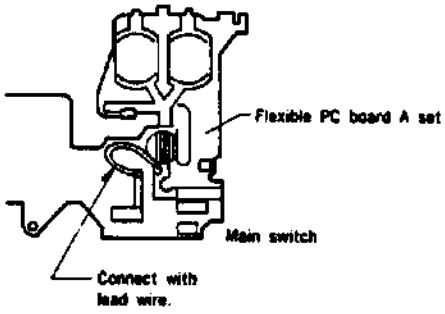


1. Place 3309 and 3319 over the axes.
2. Pushing 3309 and 3319 inside (i.e toward eyepiece), place rewinding gear E set in position. And then tighten two screws (9110).

9 Soldering

- Solder ⑬~⑯ in p. 36 A.

■ Operation checking



- Check* with main switch connected by lead wire.

*Indicating, releasing, winding and AF operation.

■ Lead wires arranging

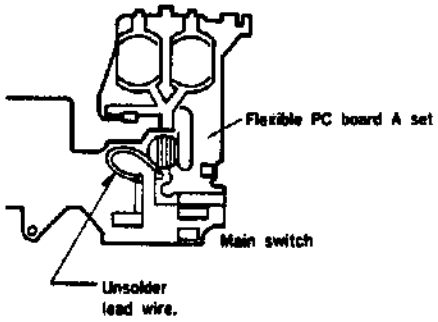
- Arrange lead wires following p. 14, 15.

■ Checking

- Body back checking (See p. 17)
- Finder back checking (See p. 18)
- Manual shutter speed, X delay time checking (See p. 21)
- AE checking (See p. 23)
- Strobo level checking (See p. 25)

(Continued on next page)

■Main swith checking



■Checking

● AF checking (See p. 27)

⑩ External parts assembling (See p. 32)

● After assembly is completed, check following Check List.

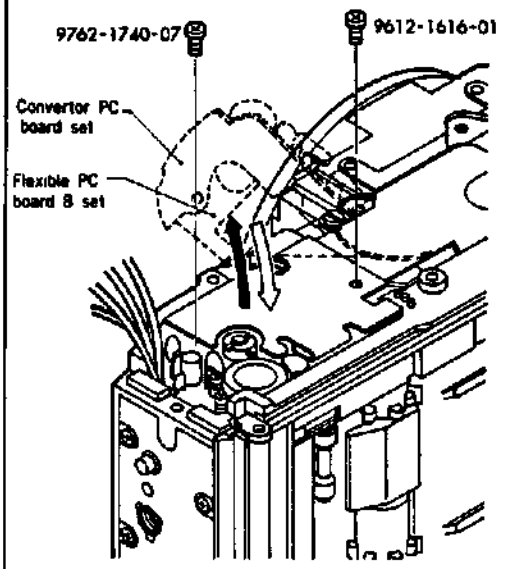
● Remove the lead wire which has been soldered for function checking.

3. Motor set replacing

1 Unsoldering

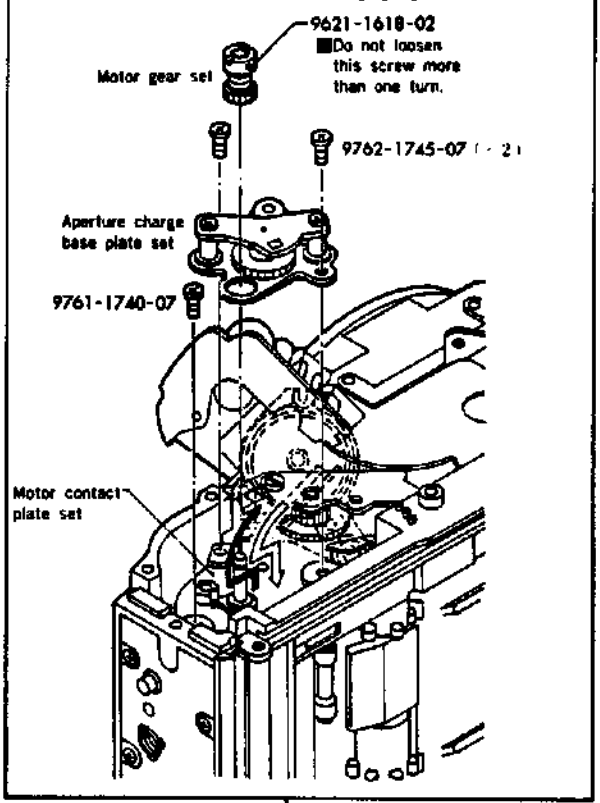
- Unsolder ①, ②, ④, in p. 36 C.

2 Flexible PC board B set disengaging



1. Remove screws (9762-1740-07)(9612-1616-01) and then lift up flexible PC board B and convertor PC board set as shown.

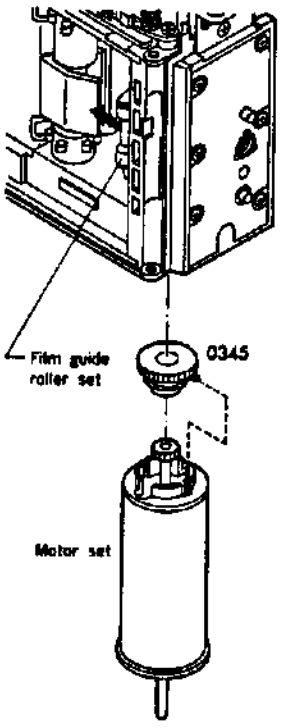
3 Motor contact plate set disengaging



1. Loosen screw (9621-1618-02) 1/2 turn and remove motor gear set.
2. Remove two screws (9762-1745-07) and aperture charge base plate set.
3. Remove screw (9761-1740-07) and lift up motor contact plate set as shown by arrow (➡)

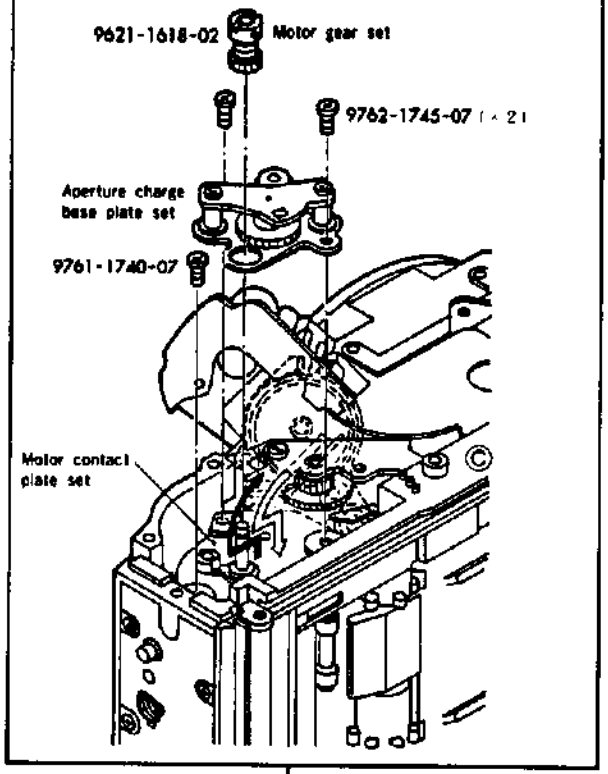
(Continued on next page)

4 Motor set replacing

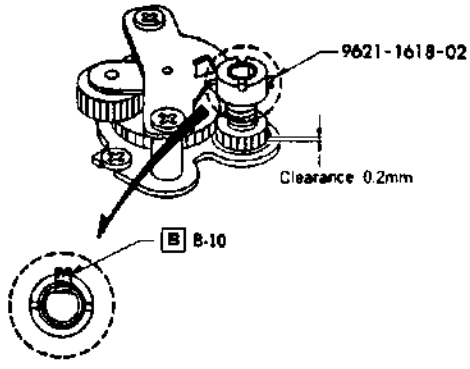


1. Pressing film guide roller set in the direction of arrow, remove motor set and 0345.
2. Fit spring (0345) into the narrower groove of new motor set. Pressing film guide roller set in the direction of arrow, install the motor set.

5 Motor contact plate set installing



1. Place motor contact plate set as shown by arrow (➡) and secure with screw (9762-1740-07).
   (Make sure the lead wires pass through the cord holder shown by ©.)
2. Install aperture charge base plate set with two screws (9761-1745-07).
3. Place motor gear set over motor axis as shown and tighten screw (9621-1618-02).



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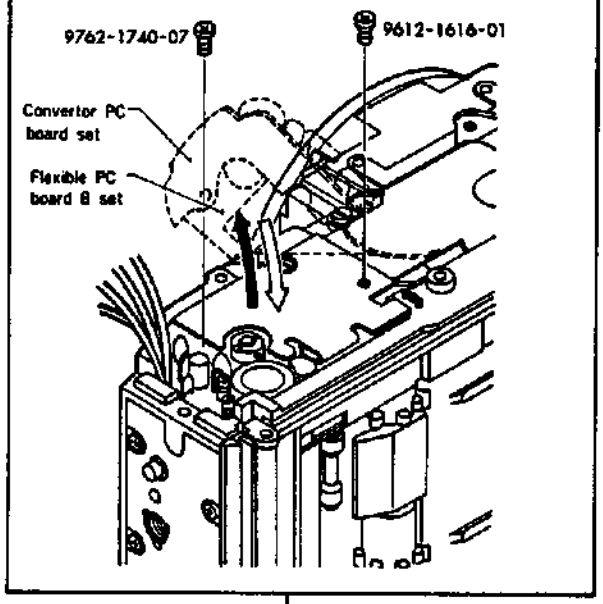
6 Flexible PC board B set installing

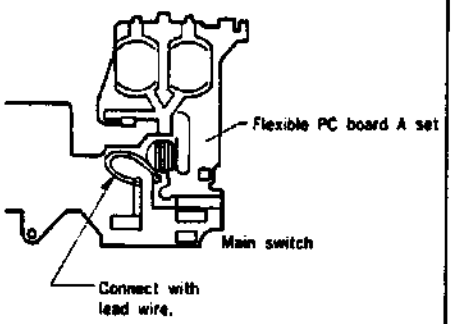


1. Place flexible PC board B and convertor PC board set in position and tighten screws (9762-1740-07)(9612-1616-01).

7 Soldering

- Solder ①, ②, ④, in p. 36 C.

■Operation checking



- Check* with main switch connected by lead wire.

  *Indicating, releasing, winding and AF operation.

■Lead wires arranging

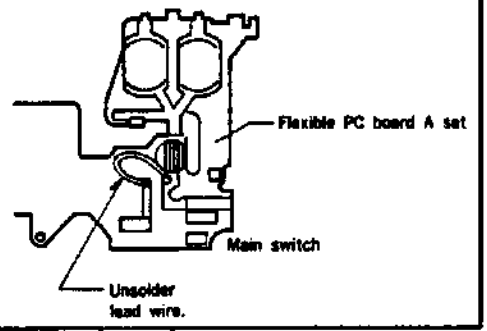
- Arrange lead wires following p. 14, 15.

■Checking

- Body back checking (See p. 17)
- Finder back checking (See p. 18)
- Manual shutter speed, X delay time checking (See p. 21)
- AE checking (See p. 23)
- Strobo level checking (See p. 25)

(Continued on next page)

■ Main switch checking



● Remove the lead wire which has been soldered for operation checking.

■ Checking

● AF checking (See p. 27)

8 External parts assembling (See p. 32)

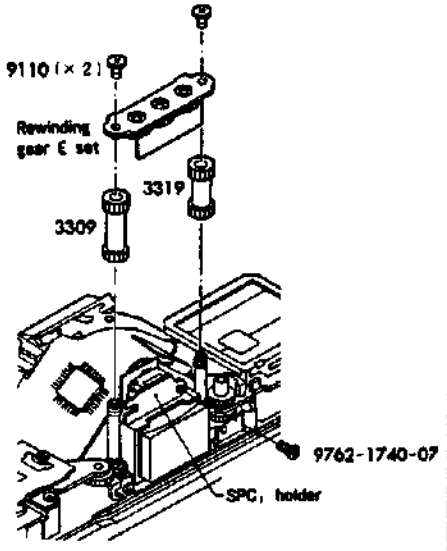
● After assembly is completed, check following Check List.

4. Mirror box set removing

1 Unsoldering

● Unsolder ①, ④, ⑦, ⑩ in p. 36 A.
● Unsolder ③, ⑤, ⑦, ⑧ in p. 36 B.
● Unsolder ①~④, ⑥~⑧ in p. 36 C.

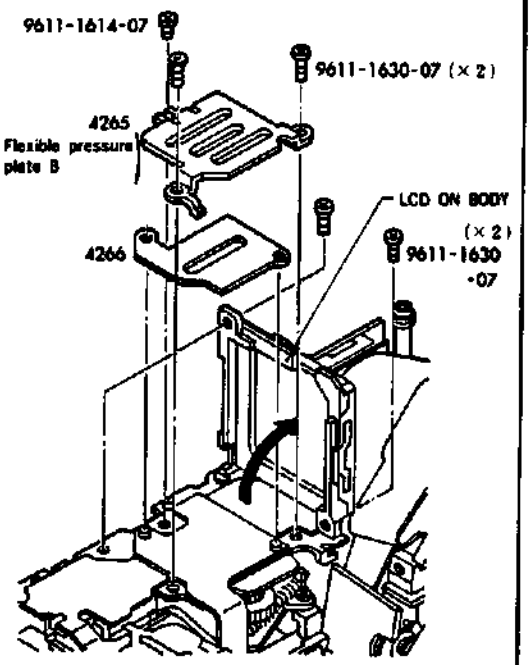
2 Rewinding gear E set, SPC, holder removing



1. Remove two screws (9110)
   Remove rewinding gear E set, 3309, 3319.
2. Remove screw (9762-1740-07).
   Remove SPC, holder from pentaprism holder.

(Continued on next page)

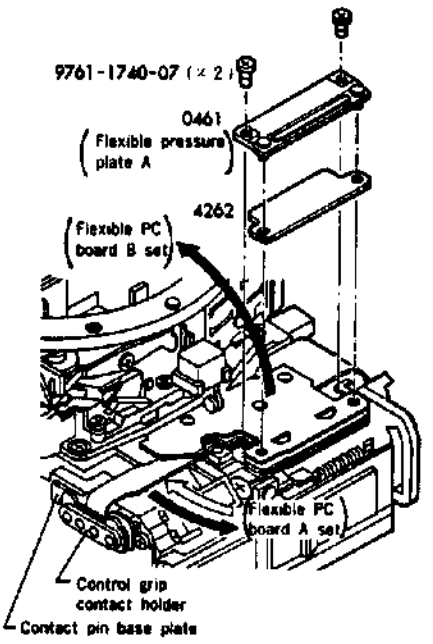
3 Flexible pressure plate B removing



1. Remove two screws (9611-1630-07) and lift body-LCD in the direction of arrow. (DO NOT MAKE ANY SCRATCHES on body-LCD.)
2. Holding as they are remove three screws (9611-1630-07 × 3)(9611-1614-07), 4265 and 4266.

4 Flexible pressure plate A removing

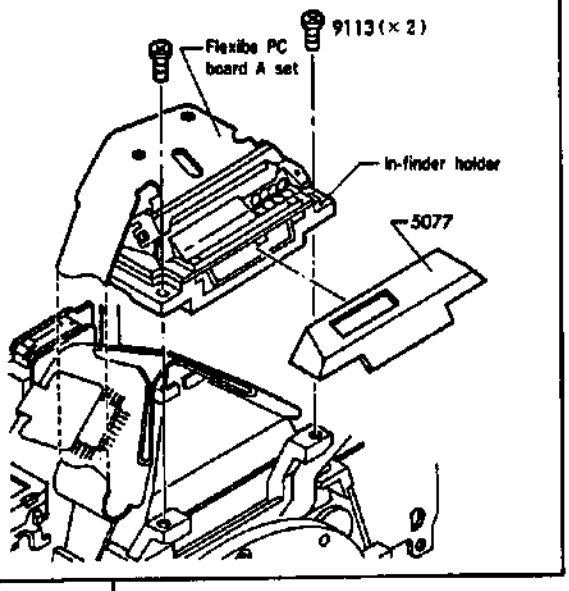
(Three layers of PC boards)



1. Remove two screws (9761-1740-07), 0461 and 4262.
2. Detach control grip contact holder of flexible PC board A from contact pin base plate. (attached with double-faced tape).
3. Lifting flexible PC board B up, take flexible PC board A out in the direction of arrow (➡).

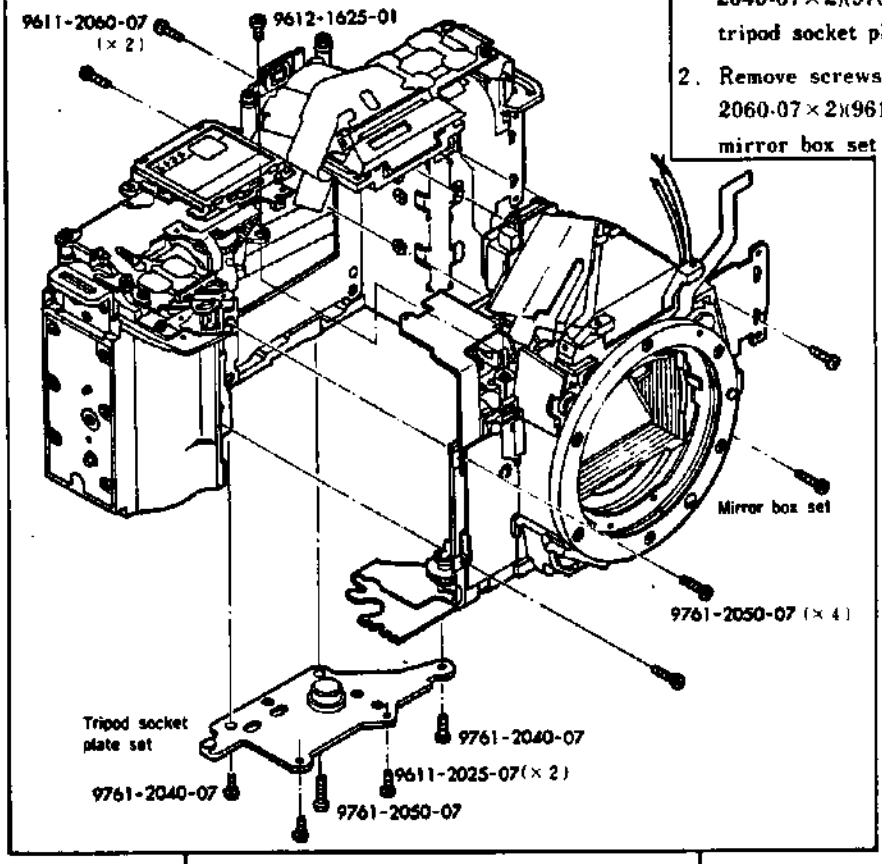
(Continued on next page)

5 In-finder holder removing



1. Remove 5077 (attached with double-faced tape).
2. Remove two screws (9113) and in-finder holder.

6 Mirror box set removing



1. Remove screws (9611-2025-07 × 2)(9761-2040-07 × 2)(9761-2050-07) and then remove tripod socket plate set.
2. Remove screws (9761-2050-07 × 4)(9611-2060-07 × 2)(9612-1625-01) and remove mirror box set from body.

■Mirror box set repairing
- Perform checking, repairing, replacing. (See p. 8~11)

■Flexible PC board B set replacing (See p. 59)

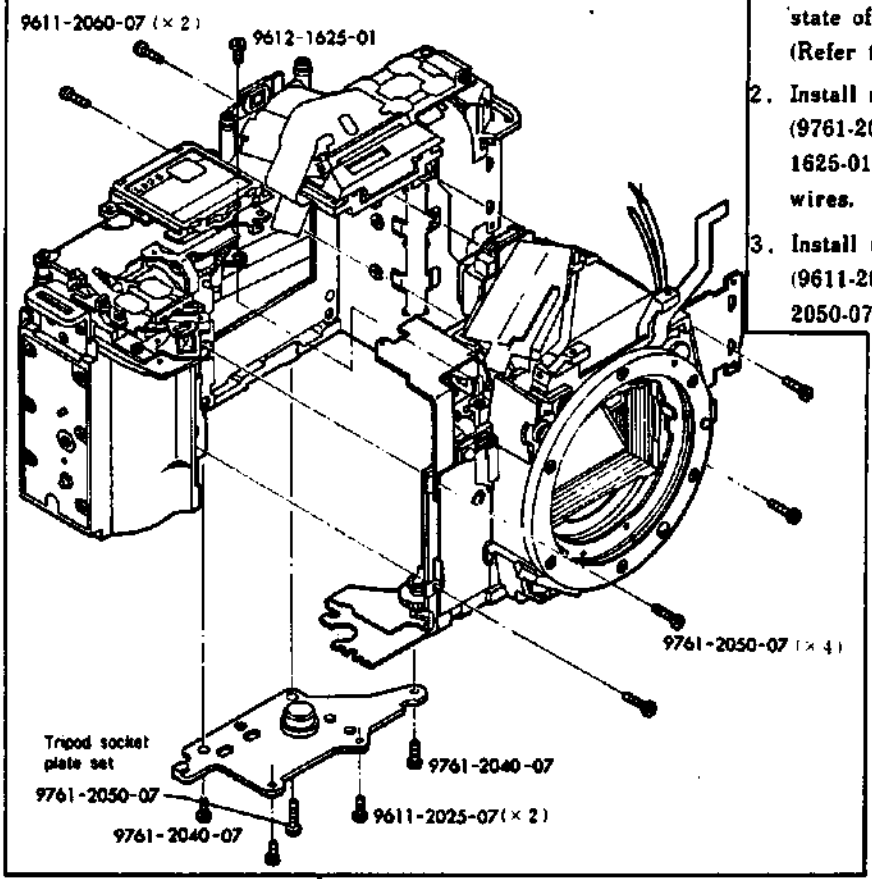
■AF drive set replacing (See p. 60)

■Shutter set replacing (See p. 63)

7 Mirror box set installing
- For mirror box set installing, see p. 55.

5. Mirror box set installing

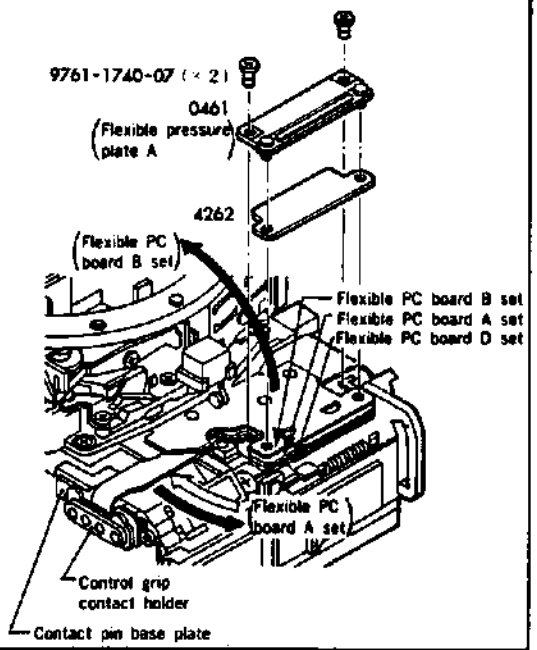
1 Mirror box set installing



1. Keep body in the state of winding completion, and charge lever of mirror box in the state of shutter release completion. (Refer to p. 6)
2. Install mirror box on body with screws (9761-2050-07×4)(9611-2060-07×2)(9612-1625-01)...Pay attention not to catch lead wires.
3. Install tripod socket plate set with screws (9611-2025-07×2)(9761-2040-07×2)(9761-2050-07).

2 Flexibe pressure plate A installing

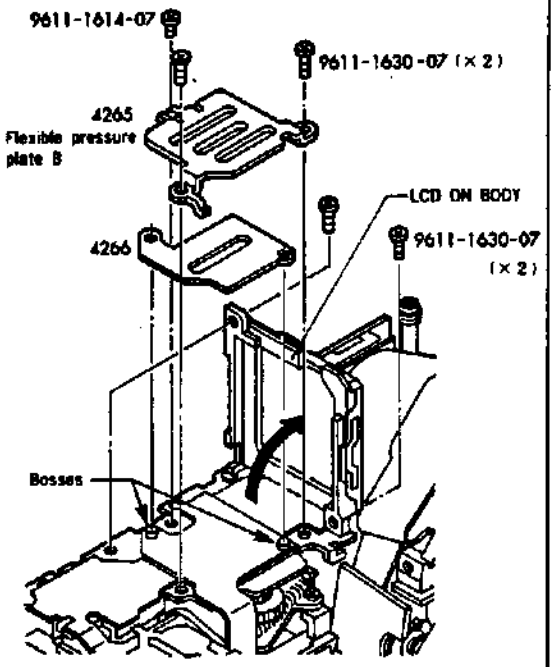
(Three layers of PC boards)



1. Clean contact surfaces of flexible PC boards. Place flexible PC board-D, -A, -B, 4262, and 0461 (in this order) in position. Secure them with two screws (9761-1740-07).
2. Attach control grip contact holder (on flexible PC board A) to contact pin base plate with double-faced tape.

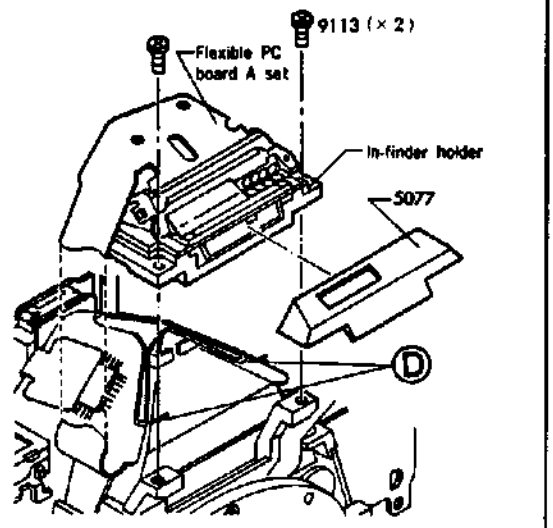
(Continued on next page)

3 Flexible pressure plate B installing



1. Lifting body-LCD up in the direction of arrow, install the parts. (Pay attention NOT TO MAKE ANY SCRATCHES on body-LCD).
   (1)Clean contact surfaces of flexible PC boards A and B. Fit them onto the bosses of winding base plate.
   (2)Fit 4266 onto the bosses of winding base plate. Place 4265 in position and then tighten three screws (9611-1630-07×2)(9611-1614-07).
2. Install body-LCD with two screws (9611-1630-07).

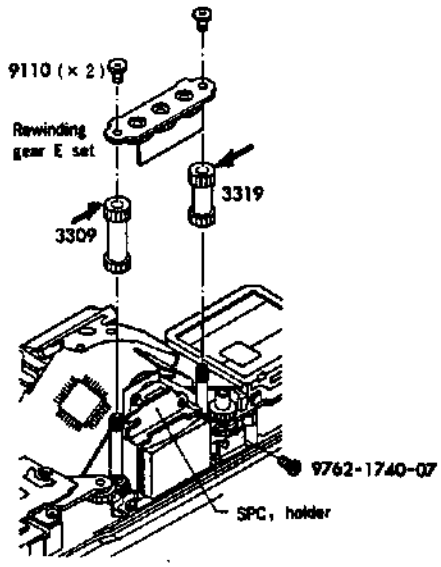
4 In-finder holder installing



1. Holding Ⓓ of flexble PC board A as shown, install in-finder holder with two screws (9113).
   ※After installing, perform "In-finder display position adjusting" on p. 19.
2. Attach 5077 with double-faced tape.

(Continued on next page)

5 Rewinding gear E set, SPC, holder installing

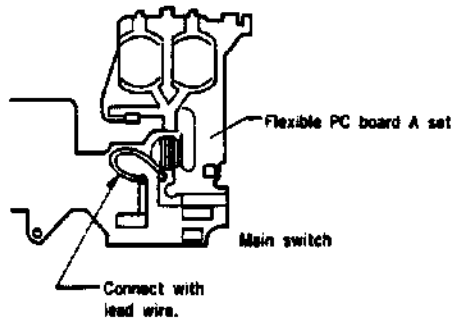


1. Install SPC, holder with screw (9762-1740-07).
2. Place 3309, 3319 over the axes.
3. Pushing 3309 and 3319 inside (i.e toward eyepiece), place rewinding gear E set in position. And the tighten two screws (9110).

6 Soldering

- Solder ①, ④, ⑦, ⑩ in p. 36 [A].
- Solder ③, ⑤, ⑦, ⑧ in p. 36 [B].
- Solder ①~④, ⑥~⑧ in p. 36 [C].

■ Operation checking



- Check* with main switch connected by lead wire.

  *Indicating, releasing, winding and AF operation.

■ Lead wires arranging

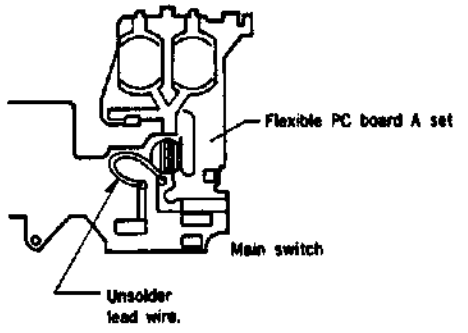
- Arrange lead wires following p. 14, 15.

■ Checking

- Body back checking (See p. 17)
- Finder back checking (See p. 18)
- Manual shutter speed, X delay time checking (See p. 21)
- AE checking (See p. 23)
- Strobo level checking (See p. 25)

(Continued on next page)

■ Main switch checking



● Remove the lead wire which has been soldered for operation checking.

■ Adjusting

● AF adjusting (See p. 27)

7 External parts assembling (See p. 32)

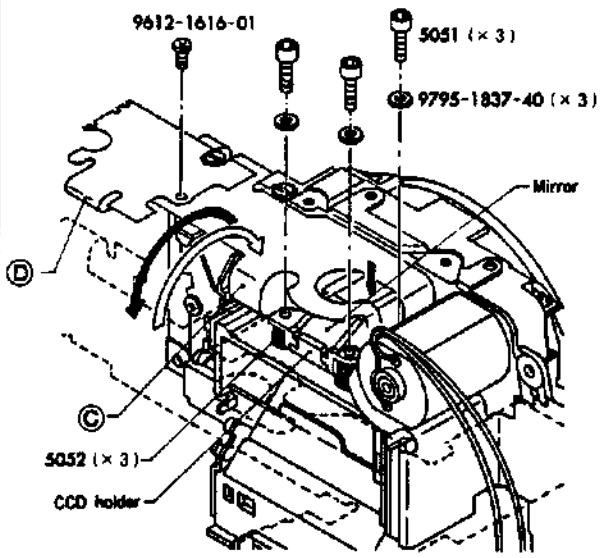
● After assembly is completed, check following Check List.

6. Flexible PC board B set replacing

1 Mirror box set removing
- For mirror box set removing, see p. 17–19.

2 Unsoldering
- Unsolder ①, ②, ④, ⑥ in p. 36 B.
- Unsolder ⑤ in p. 36 C.
- Unsolder ① in p. 36 D.

3 Flexible PC board B set replacing



1. Remove screw (9612-1616-01).
2. Pushing CCD holder (the area shown by arrow), remove screws (5051×3) and washers (9795-1837-40×3) by the use of hexagon wrench. Remove flexible PC board B set. (Pay attention NOT TO TOUCH THE MIRROR.)
3. Place CCD holder of new flexible PC board B on the three springs (5052). Pushing the area shown by arrow, secure the holder with screws (5051×3) and washers (9795-1837-40×3) by the use of hexagon wrench.
4. Loosen the screws (5051), tightened fully, by 4-1/2 turns.
5. Turn Ⓒ of flexible PC board B back and insert into the space.
6. Turn Ⓓ back and tighten screw (9612-1616-01).

5 Soldering
- Solder ①, ②, ④, ⑥ in p. 36 B.
- Solder ⑤ in p. 36 C.
- Solder ① in p. 36 D.

5 Flexible PC board and lead wires arranging
- Arrange flexible PC board and lead wires fllowing p. 7 Fig. 2.

6 Mirror box set installing
- For mirror box set installing, see p. 55.

7. AF drive set replacing

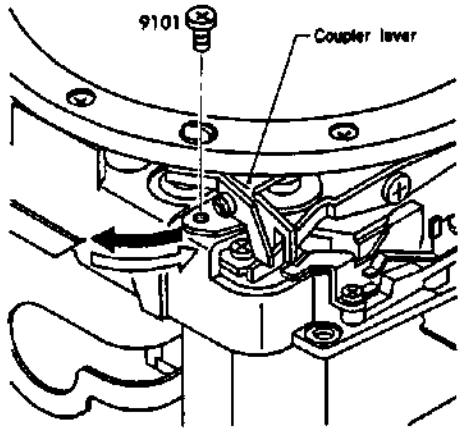
1 Mirror box set removing

- For mirror box set removing, see p. 17–19.

2 Unsoldering

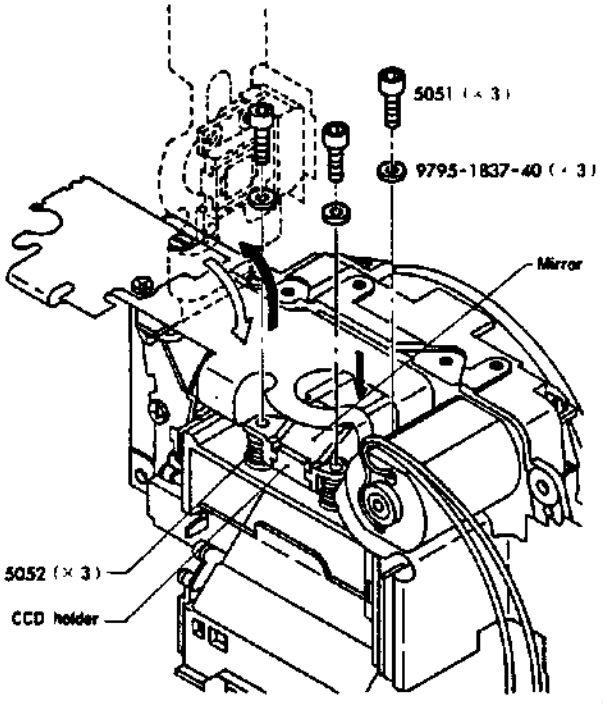
- Unsolder ⑥, in p. 36 B.
- Unsolder ① in p. 36 D.

3 Coupler lever removing



1. Remove screw (9101) and then remove coupler lever in the direction of arrow (➡).

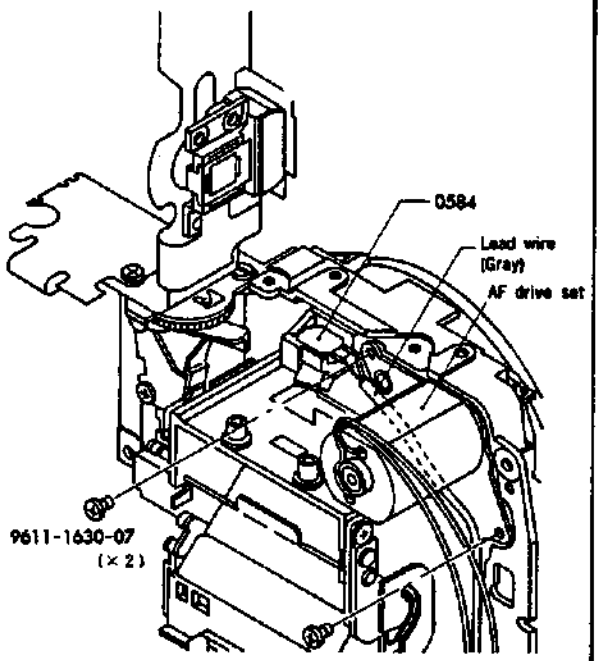
4 Flexible PC board B disengaging



1. Pushing CCD holder (the area shown by arrow), remove screws (5051 × 3) and washers (9795-1837-40 × 3) by the use of hexagon wrench.....Pay attention NOT TO TOUCH THE MIRROR.
   Turn flexible PC board B up as shown by dotted line. (Pay attention to springs 5052 which easily come off.)

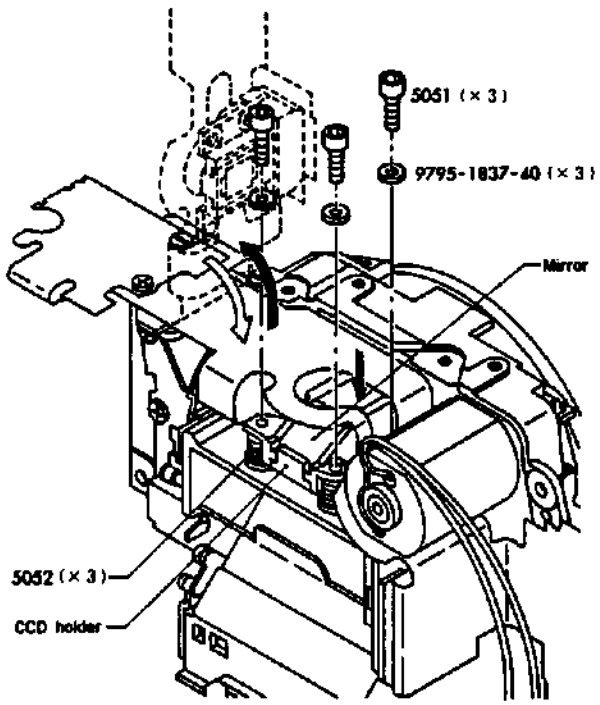
(Continued on next page)

5 AF drive set replacing



1. Remove two screws (9611-1630-07) and AF drive set.
2. Install new AF drive set with two screws (9611-1630-07)
3. Pass lead wire (gray, from 0584) between AF drive set and mirror box.

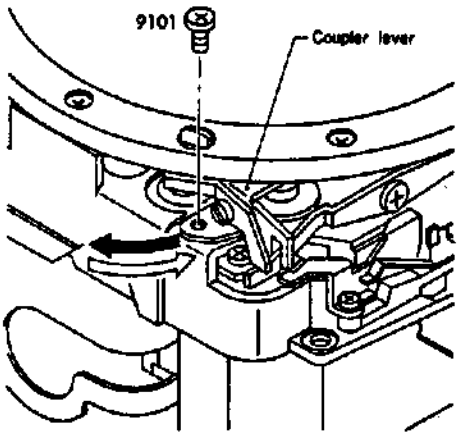
6 Flexible PC board B set installing



1. Place CCD holder on the three springs (5052). Pushing the area shown by arrow, secure the holder with screws (5051 × 3) and washers (9795-1837-40 × 3) by the use of hexagon wrench.....Pay attention NOT TO TOUCH THE MIRROR.
2. Loosen the screws (5051), tightened fully, by 4-1/2 turns.
3. Insert flexible PC board B into the space as shown by arrow.

(Continued on next page)

7 Coupler lever installing



1. Install coupler lever as shown by arrow (⇨), and tighten screw (9101)

※After installing, adjust AF coupler (See p. 11)

8 Soldering

- Solder ⑥ in p. 36 **B**.
- Solder ① in p. 36 **D**.

9 Flexible PC board and lead wires arranging

- Arrange flexible PC board and lead wires following p. 7 Fig. 2.

10 Mirror box set installing

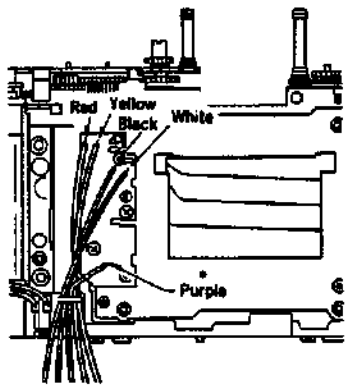
- For mirror box set installing, see p. 55.

8. Shutter set replacing

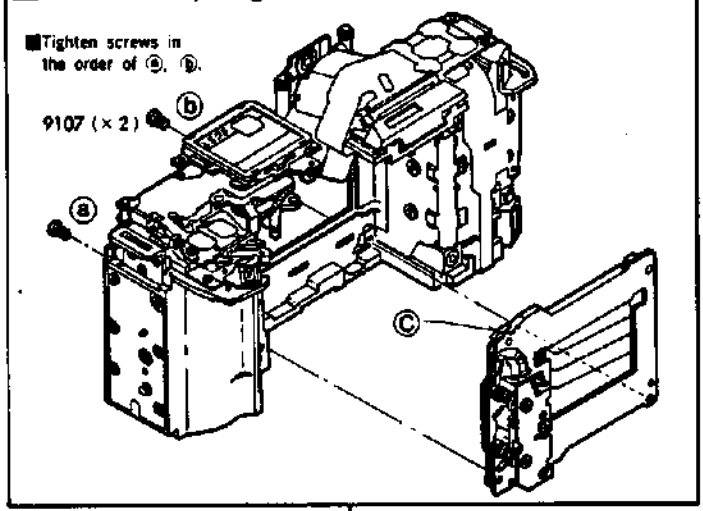
1 Mirror box set removing

- For mirror box set removing, see p. 17–19.

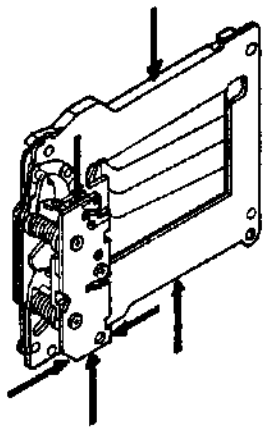
2 Unsoldering (the positions shown below)



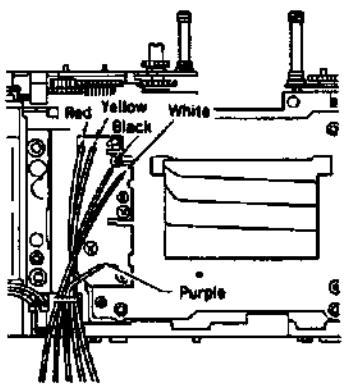
3 Shutter set replacing



1. Remove two screws (9107) and shutter set.
Precaution: When handling shutter, hold it between your fingers as shown: otherwise, shutter speed will change.



4 Soldering (the positions shown below)



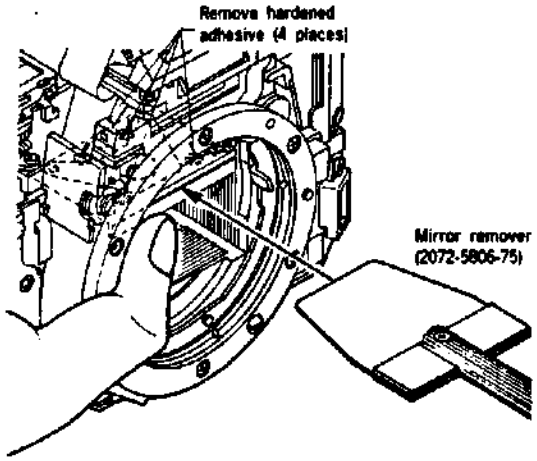
2. Fit © of new shutter set into body first, and secure it with two screws (9107).

5 Mirror box set installing

- For mirror box set installing, see p. 55.

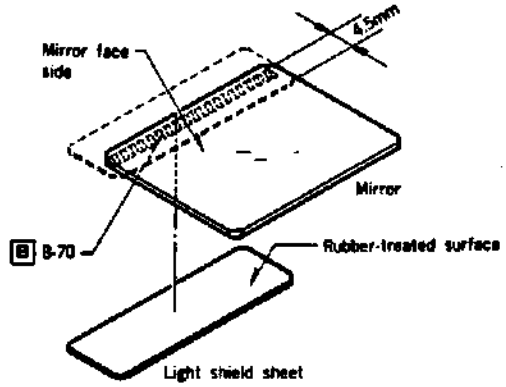
9. Mirror replacing

1 Mirror removing



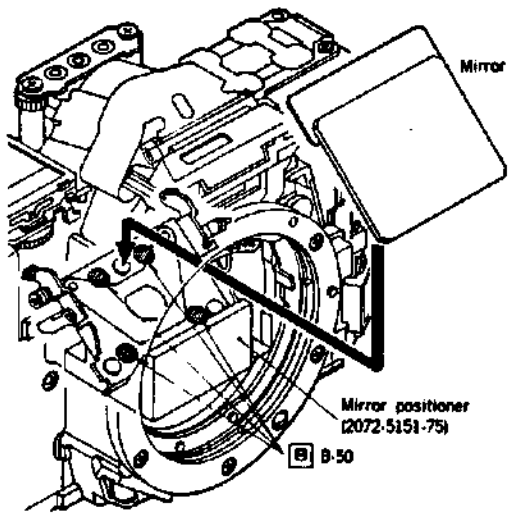
1. Insert mirror remover (2072-5806-75) between mirror and mirror holder, lifting mirror holder slightly by finger.
2. Move mirror remover back and forth to separate mirror from mirror holder.
3. Remove hardened adhesive on mirror holder using cutter, etc.

2 Light shield sheet adhering

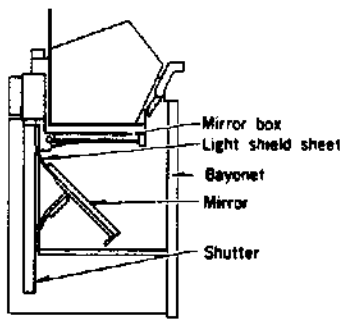


1. Apply adhesive (B-70) on reverse side of new mirror. (See left)
2. Stick light shield sheet. (See left).

3 Mirror installing



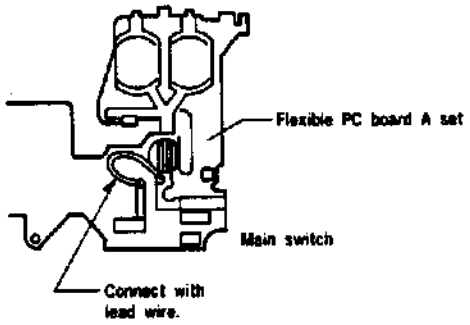
1. Apply adhesive (B-50) on mirror holder. (See left).
2. Install mirror in position on mirror holder, avoiding touching light shield sheet and adhesive. (Light shield sheet condition should be as shown below.)



3. Put mirror holder on mirror positioner (2072-5151-75), and leave as it is for 24 hours.

(Continued on next page)

■ Operation checking



● Check* with main switch connected by lead wire.
※Indicating, releasing, winding and AF operation.

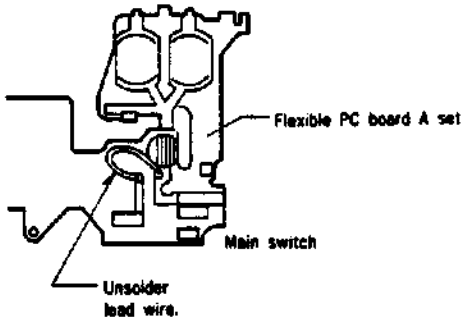
■ Lead wires arranging

● Arrange lead wires following p. 14, 15.

■ Checking

- Body back checking (See p. 17)
- Finder back checking (See p.18)
- Manual shutter speed, X delay time checking (See p. 21)
- AE checking (See p. 23)
- Strobo level checking (See p. 25)

■ Main switch checking



● Remove the lead wire which has been soldered for operation checking.

■ Checking

● AF checking (See p. 27)

[4] External parts assembling (See p. 32)

● After assembly is completed, check following Check List.

TROUBLE SHOOTING

1. Introduction

This Trouble-Shooting covers symptoms and causes of troubles found on camera side. Even when the trouble is found on camera side, the cause may lie in the related accessories. Use this chart, checking trouble with/without accessories on the camera depending on trouble.

2. Description

1. This Trouble Shooting Chart is classified mainly into TROUBLE SHOOTING CHART and TROUBLE SHOOTING MANUAL, which can be used properly depending your desire.

TROUBLE SHOOTING CHART

- Provides you with significant points of troubles (symptoms, causes), including contents for Trouble Shooting manual.

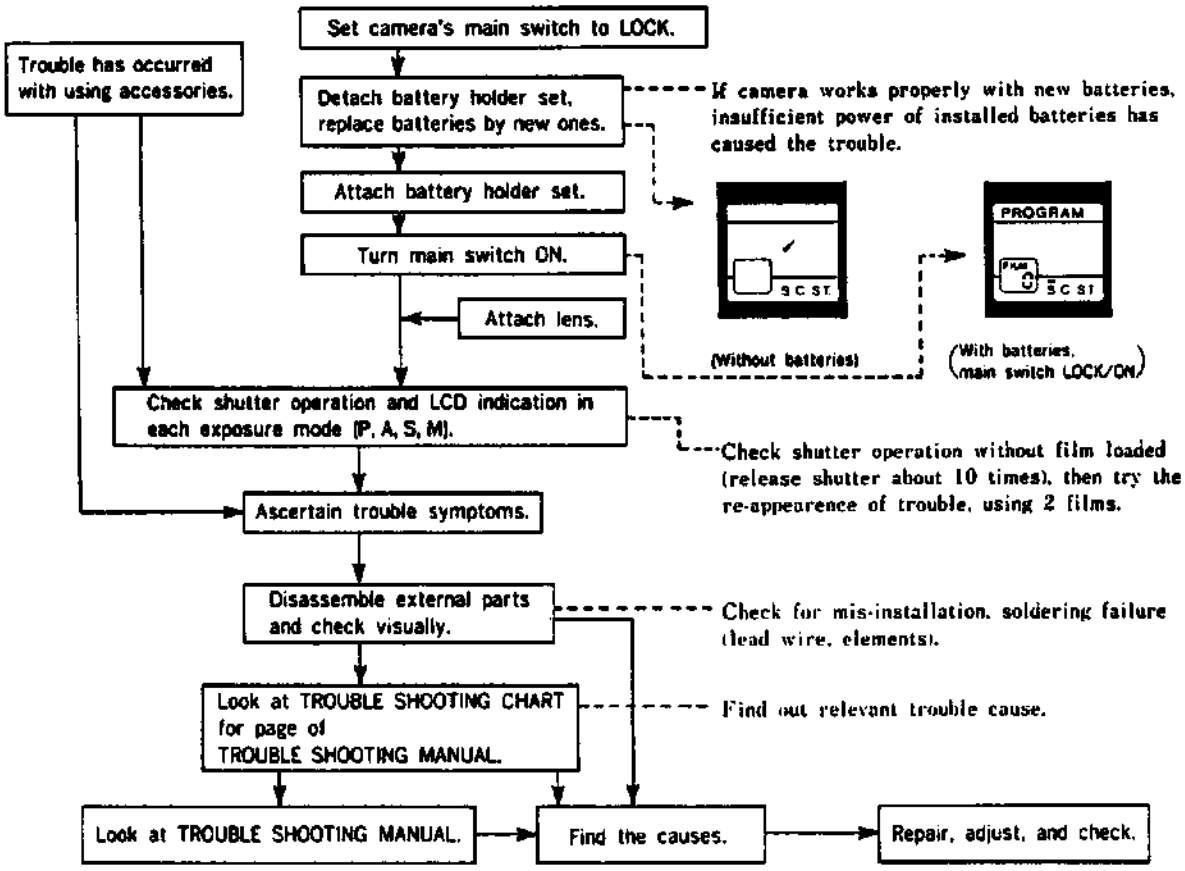
TROUBLE SHOOTING MANUAL

- Provides you with detailed trouble causes, including proper measures, and check points etc.
- Also provides you with checking method by YES-NO answering so that you can find out cause easily.

2. Trouble described here is due to a single case only. Trouble due to a plurality of causes should be checked collectively on the basis of the causes listed in this chart.

3. Repair Procedure

1. Check the causes in the following order.


Set camera's main switch to LOCK.
Trouble has occurred with using accessories.
Detach battery holder set, replace batteries by new ones.
If camera works properly with new batteries, insufficient power of installed batteries has caused the trouble.
Attach battery holder set.
Turn main switch ON.
Attach lens.
PROGRAM
(Without batteries)
(With batteries, main switch LOCK/ON)
Check shutter operation and LCD indication in each exposure mode (P, A, S, M).
Check shutter operation without film loaded (release shutter about 10 times), then try the re-appearence of trouble, using 2 films.
Ascertain trouble symptoms.
Disassemble external parts and check visually.
Check for mis-installation, soldering failure (lead wire, elements).
Look at TROUBLE SHOOTING CHART for page of TROUBLE SHOOTING MANUAL.
Find out relevant trouble cause.
Look at TROUBLE SHOOTING MANUAL.
Find the causes.
Repair, adjust, and check.

2. If trouble does not reappear,
   - Check operation by releasing shutter about 100 times (battary holder side, lens side up) with film loaded. (Attach user's batteries and lens.)
   - Check operation about user's complaint and trouble symptom when received, following p. 61 "checking items for non-reappearence".

4. Servicing Precautions

1. Check voltage using degital multi meter (but not necessarily when input impedance is more than 10MΩ).
2. Use circuit tester whose voltage is 3V or less to check circuit connection.
3. Trouble is most unlikely to occur in electronic parts, such as ICs, diodes, transistors, resistors, and capacitors. Therefore, check the cause of trouble, with the focus on the defective soldering of lead wires and electrical parts, and switching contacts.
4. When checking soldered or plated parts, avoid pressing the parts or pulling lead wires unnecessarily.
5. Since voltage measuring parts are narrow, mount a pin or something similar at the tip of an alligator clip for measurement.
6. When measuring switching patterns, special care should be taken so that the patterns out-side switch operation are free from flaws. For switch contacts, measure their base, which is not directly affected by contact pressure.
7. Be sure to turn off the power switch before removing electrical parts (when a constant-voltage regulated power supply is used).
8. The ideal temperature range for the soldering iron tip is 290°C to 340°C. If the temperature is higher, however, perform soldering quickly. Also, be sure to clean the tip when soldering.
9. Be careful with static electricity when handling IC.
10. When using DC power supply, set at 6.4V, 2A.

CONTENTS

1 TROUBLE SHOOTING CHART

Page

1. Shutter releasing/winding failure

- Trouble symptoms with main Sw. LOCK 1
- Trouble symptoms with main Sw. ON 2
- Trouble symptoms with Sw. 0/1 ON 2
- Trouble symptoms with Sw. 2 ON 3
- Other releasing/winding failure 4

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2 TROUBLE SHOOTING MANUAL

(Find the page of troubles, in "1 TROUBLE SHOOTING CHART".)

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- Precaution when installing winding motor 63
- Precaution when replacing winding-base-plate-set 64
- Checking of unstable shutter speed and installing shutter set 66
- Servicing measures against "in-finder segments OFF" 68
- Servicing measures against "transistor (for driving motor) heating" 70
- Checking for "battery drains sharply" (Current leakage checking, BC lock voltage checking) 71
- Aperture control checking procedure 73

3 Switch and electrical element checking 74

4 Function of switches 80

Schematic wiring diagram -01

Schematic wiring diagram -02

Electrical elements locating (on flex PCB-A) diagram -01

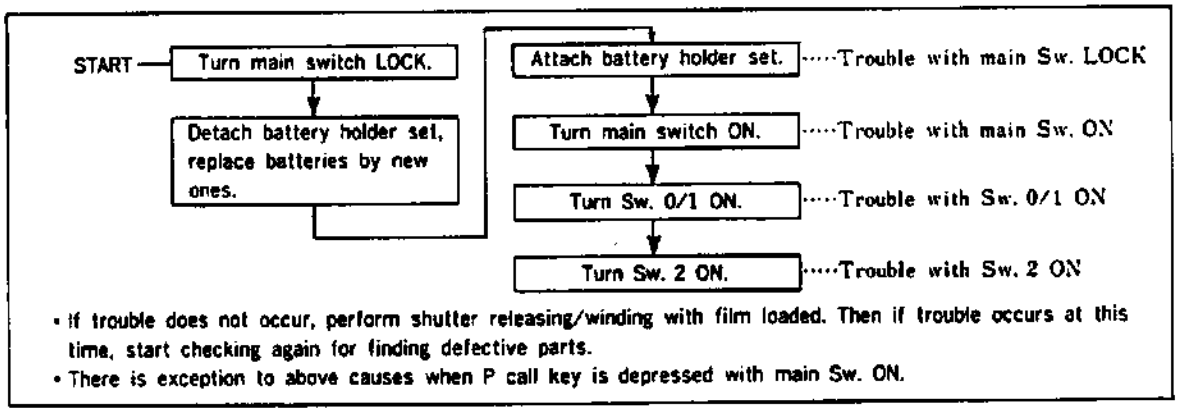
Electrical elements locating (on flex PCB-A) diagram -02

Electrical elements locating (on flex PCB-B) diagram

1 TROUBLE SHOOTING CHART

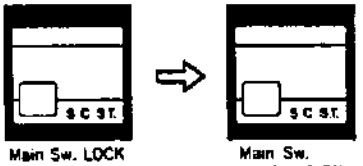
1. Shutter releasing/winding failure

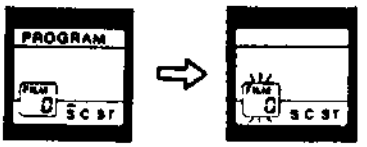
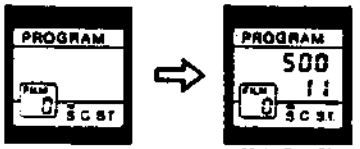
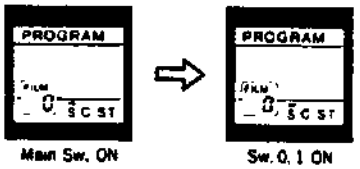
(For finding causes out, follow the below chart, first.)

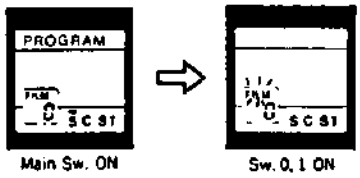
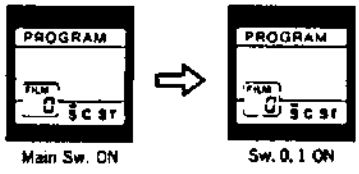
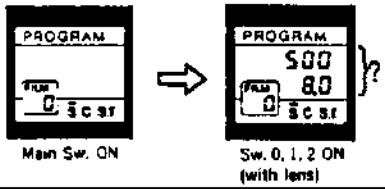
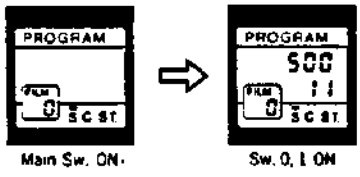
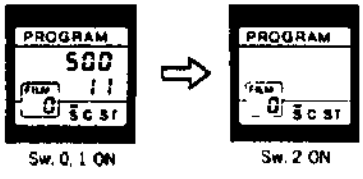

START
Turn main switch LOCK.
Detach battery holder set, replace batteries by new ones.
Attach battery holder set.
·····Trouble with main Sw. LOCK
Turn main switch ON.
·····Trouble with main Sw. ON
Turn Sw. 0/1 ON.
·····Trouble with Sw. 0/1 ON
Turn Sw. 2 ON.
·····Trouble with Sw. 2 ON

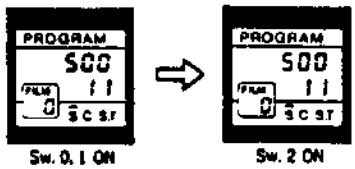
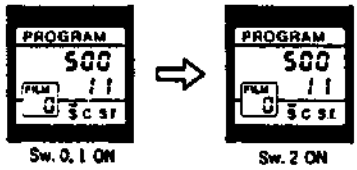
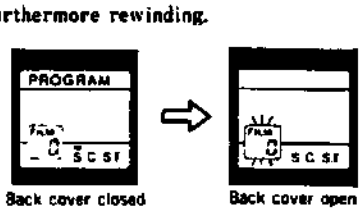
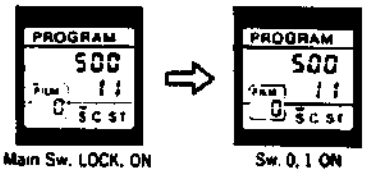
- If trouble does not occur, perform shutter releasing/winding with film loaded. Then if trouble occurs at this time, start checking again for finding defective parts.
- There is exception to above causes when P call key is depressed with main Sw. ON.

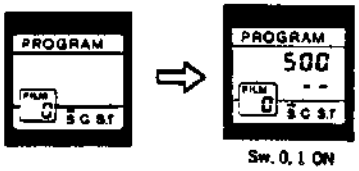
- Description of chart
  Switches : Circled ; short circuit (Switch may remain ON.) Uncircled ; contact failure
  Lead wire : Circled ; short circuit with GND. Uncircled ; contact failure or disconnection
  Electric elements : Circled ; short circuit. Uncircled ; cold soldering or defect
  Mechanical and other causes : Two layers·····connection of flexible PC board -A and -B sets
  Three layers·····connection of flexible PC board -A, -B, and -D sets
  Flexible PC board-A set : flex PCB-A

Symptoms	Page	Switches	Lead wires	Electrical elements	Mechanical and causes
■ Trouble symptoms with main Sw. LOCK					
(1) Camera not powered at all & no LCD indication.  Main Sw. LOCK → Main Sw. Sw. 0, 1, 2 ON	19		2 (Red) 3 (Black)	• Flex PCB-A XL_1 • Flex PCB-B D_{11}, D_{13} • Converter PCB (0450)	• Spring contact, battery holder contact : stain • Battery holder base plate (+), (−) contacts : stain • Between converter PCB and flex PCB-B : soldering failure
(2) Motor running and stand-by display remains ON by attaching battery holder. Main Sw. LOCK, ON	19			• Flex PCB-B IC_9 • Converter PCB (0450)	
(3) Irregular display* with no releasing (or no winding) When main Sw. LOCK/ON : Irregular display When Sw. 0/1 ON : Irregular display When Sw. 2 ON : No releasing, and winding-motor may run irregularly ※All display ON, all display OFF, only frame counter display ON, etc. Main Sw. LOCK, ON Sw. 0, 1 ON	20	30 ㉚	43 (Blue) ㉝ (Blue) 49 (Orange or Red)	• Flex PCB-A C_5, C_{51}, C_{31}, C_{32}, R_1, R_{33}, XL_1, IC_1, IC_4 • Flex PCB-B R_{27}, Q_5 • Converter PCB (0450)	• Between converter PCB and flex PCB-B : soldering failure • Two layers : contact failure

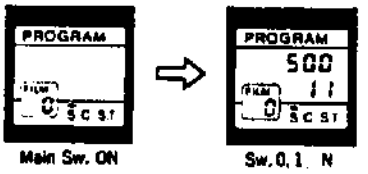
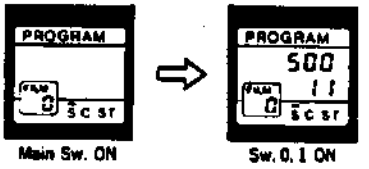
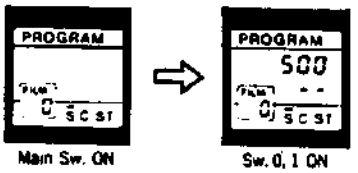
Symptoms	Page	Switches	Lead wires	Electrical elements	Mechanical and other causes
■Trouble symptoms with main Sw. ON.					
(1) Film end display appears about 1.2 sec after main Sw. ON.  Main Sw. LOCK → Main Sw. ON					
① After 1.2 sec of motor running, film end display appears.	20	④ ⑩ REW-3	22(Blue) ㉕(Yellow) ㊶(Yellow) 46(Brown) 47(Black)	• Rewinding base plate Q_{15} (including short circuit Ⓔ−Ⓑ), R_{31} • M_1 • Converter PCB (0450)	• Winding base plate set : defect • Aperture return lever : defect • Between converter PCB and flex PCB-B : soldering failure • Motor contact plate set : stain • Shutter set : defect
② Within 1.2 sec no motor running with mirror up and then film end display appears.	21			• Flex PCB-A IC_4 • Flex PCB-B Q_2, Q_3, Q_4, Q_5, R_{19} • Converter PCB (0450)	• Between converter PCB and flex PCB-B : soldering failure
③ After winding motor running for 1.2 sec, film end display ON with mirror up (Normal display).	22			• Flex PCB Q_7	• Clutch base plate set (0215) : defect • Gear on winding motor : falling/ riveting failure
④ By film loading, winding motor runs for 1.2 sec and film end display appears.	22		46(Brown) 47(Black)	• Rewinding base plate Q_{15}, R_{31} • M_1	• Gears for rewinding : no operation • Sprocket axis (0352) : defect
(2) Shutter releasing by turning main Sw. ON.  Main Sw. LOCK, ON → Main Sw. ON	22	②	㉙(Grey) ㊸(Grey) ㊹(Grey)	• PCB-C (0451) soldering : short circuit	• Remote control terminal set (0153) : short circuit • Release contact plate (0423) : isolation tape missing
■Trouble symptoms with Sw. 0/1 ON					
(1) When Sw. 0/1 ON, no metered value display. When Sw. 2 ON, possibly no shutter releasing.  Main Sw. ON → Sw. 0, 1 ON	23	Main Sw. →0, →1	→27(Black) →45(Black) 63(Brown)	• Flex PCB-A →R_{30}, →R_{31} IC_1, IC_4 • Flex PCB-B R_{27}, Q_5	• Release contact plate set (0423) : defect • Two layers : contact failure △Normal display with control key ON

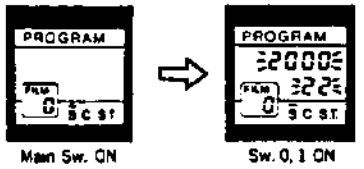
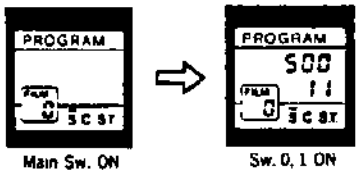
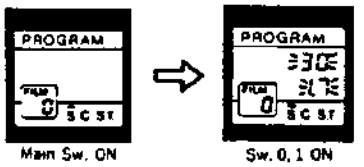
Symptoms	Page	Switches	Lead wires	Electrical elements	Mechanical and other causes
(2) When Sw. 0/1 ON, only "FILM" blinks and no more operation.  	23	REW 1	⑫(Brown) ⑯ (Brown or Orange)	• Flex PCB-A IC_1	• Rewinding stop lever spring (3329), rewinding operation lever spring (3324) : off position
(3) Normal operation for 20 sec after main Sw./P call key ON. Then, no releasing, no winding. (No metered values display with Sw. 0/1/2 ON, at 20 sec and after).  	23			• Flex PCB-A R_1, R_{33}, C_3, Q_{16}, IC_1	• Flex PCB-A (0401) : connection of printed wire
(4) Unstable display with Sw. 0/1 ON, no shutter releasing with Sw. 2 ON.  	24				• BL contact holder set (0150) L_4-L_5 : short circuit
(5) Shutter releasing by Sw. 0/1 ON (w/ normal display)  	24			• Flex PCB-A IC_1	• Remote control terminal set (0153) : short circuit
■ Trouble symptoms with Sw. 2 ON					
(1) When Sw. 2 ON, Metered values disappear (Stand-by display ON)  					
① By Sw. 2 ON, metered values disappear w/o winding motor running. (Winding motor may run slightly.) Including : metered values disappearing within 0.5 sec/at once.	25	⑩	4 (Red) 6 (Red) 5 (Black) 7 (Black) ㉙(Orange)	• Flex PCB-A IC_1 • Flex PCB-B R_{18}, Q_1, Q_2, Q_3, Q_4 (Including Tr short circuit) IC_9 • Converter PCB (0450) • M_1	• Between motor gear and bottom cover : lead wire catching • Aperture control base plate (0256) : defect • Contacts of motor contact plate set (0311) : stain • Between converter PCB and flex PCB-B : soldering failure • Battery : excessive internal resistance

Symptoms	Page	Switches	Lead wires	Electrical elements	Mechanical and other causes
② By Sw. 2 ON, metered values disappear with mirror up, no winding-motor running. (Including : mirror half way up)	26	40	24 (Orange)	• Flex PCB-B Q_1 D_{12}, IC_9	• Sw. 40 and ℓ_{24} : disconnection
③ By Sw. 2 ON, winding-motor runs for 0.5 sec and stops with mirror half way up, then metered values disappear. (stand-by display)	26				• Mirror up mechanism in mirror box : defect
④ Shutter releases normally once by Sw. 2 ON, then at winding completion, metered values disappear and no more releasing.	26			• Flex PCB-B IC_9	
⑤ When Sw. 2 ON in low temperature (about -20°C), metered value or all LCDs disappear within 1 sec. and no more shutter releasing.	26				• Motor contact plate set (0311) narrow spaces between contacts
(2) By Sw. 2 ON, no winding-motor running nor shutter releasing but normal display.  	27	2	26 (Grey) 52 (Black) 53 (Grey) 54 (Grey) 55 (Brown) → 58 (Orange) → 27 (Black)	• Flex PCB-A R_{32}, IC_1 • PCB-C (0451) R_{42}, R_{46}, R_{47} C_{37}, Q_{11}	• Between release contact plate set (0423) and flex PCB-A (0401) : soldering failure • Release contact plate set (0423) : defect * ℓ_{58} off : no shutter releasing with remote cord ℓ_{27} off : shutter releasable with remote cord
(3) By Sw. 2 ON, mirror up/half way down and no more winding (normal display). (By Sw. 2 ON winding completes or winding motor runs and mirror moves slightly.)  	27	4 400	25 (Yellow) 44 (Yellow)	• Flex PCB-A IC_1	• Diaphragm return spring (3066) : breakage • Winding stop lever spring (3074) : off position • Sw. 400 : ON-timing failure • Winding stop release sector (0370) : defect
■ Other releasing/winding failure					
(1) After rewinding completion, by opening back cover, film end display appears with furthermore rewinding.  	28				• Shutter charge lever set (0317) : defect (inclined roller, riveting failure) • Rewinding changeover fork : defect • Sprocket axis set (0352) : defect
(2) Shutter releasing by Sw. 2 ON, regardless of main Sw. LOCK.  	28			• Flex PCB-A IC_1	• Lead wire for short-circuiting main Sw. : remain

Symptoms	Page	Switches	Lead wires	Electrical elements	Mechanical and other causes
(3) Irregular display* with no releasing. (or no winding) *All display ON, all display OFF, only frame counter display ON, etc. Main Sw. LOCK, ON Sw. 0, 1 ON	28	30 ㉚	43 (Blue) ㊸ (Blue) 49 (Orange or Red)	• Flex PCB-A C_2, C_5, C_{31}, C_{32}, R_1, R_{31}, XL_1, IC_1, IC_4 • Flex PCB-B R_{27}, Q_5 • Converter PCB (0450)	• Between converter PCB and flex PCB-B : soldering failure • Two layers : contact failure
(4) Normal AF operation and display. However, no releasing when Sw. 2 ON.	29			• Flex PCB-B IC_6	
(5) Short circuit, no releasing. (Irregular display)	29		⑮ (Red)	• Flex PCB-B D_2 • Converter PCB (0450)	• ℓ_2, ℓ_3 : reversed ℓ_4, ℓ_5 : reversed • Temporary screw for aperture control base plate set : remain
(6) No releasing with "– –" in aperture display.  Sw. 0, 1 ON	29				• BL contact : defect • Flex PCB-A & BL : contact failure (L_1-L_2 : short circuit, and L_5 : contact failure)
(7) With lens attached, winding-motor runs for 1.2 sec & film end display appears. (Normal operation without lens) 	30				• Aperture return lever : defect
(8) Irregular sound at releasing and winding at winding-motor operation.	30				• Flex PCB-B and motor gear (0248) : contact • Aperture control base plate (0256) : oil shortage • Winding gears : oil shortage • Shutter : over-charged
(9) Shutter releasing by back cover open.	30	RC			• Sw. RC : unstable contact

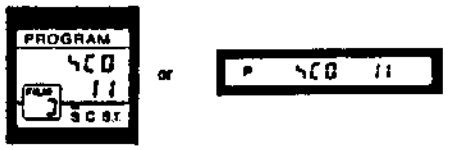
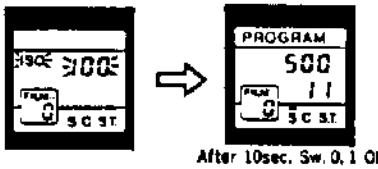
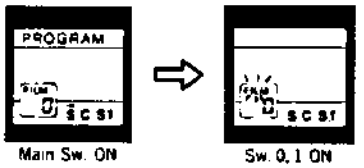
2. Exposure failure (AE/shutter/aperture operation failure)

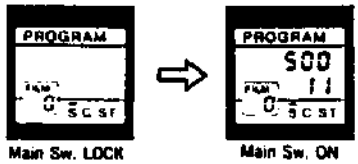
Symptoms	Page	Switches	Lead wires	Electrical elements	Mechanical and other causes
■ Underexposure					
(1) Underexposure (slightly exposed on negative) with normal display. 					
① Min. aperture regardless of setting.	31		SL_3 (Red, White)	• SL_3 • Flex PCB-A IC_3, IC_4	• Two layers : contact failure • Aperture ring claw : breakage
② Min. aperture at other setting than max. (Normal AE at max setting)	31			• PI-1 • Flex PCB-A C_{14}, C_{19}, C_{21}, C_{25}, IC_3, IC_4	• Between flex PCB-B set and -F set : soldering failure • PI-1 holder : defect • Two layers : contact failure
③ Fast shutter speed. (Normal aperture control)	31			• SL_3	• Shutter set : defect (uneven shutter speed)
④ Under exposure in all frames. (ISO mis-reading w/DX coded film)	32			• Flex PCB-D IC_5	• ISO : User's mis-setting • DX code : mis-reading • CAS contact : defect
⑤ No mirror up (only circumference of frame exposed).	32				• Mirror holder : off position • Mirror up lever : riveting failure
(2) No exposure regardless of normal display. (No-slit shutter) 					
① No-slit shutter in all exposure modes. (Normal aperture control)	32		14 (Yellow) 15 (Red)	• SL_3 • Flex PCB-A IC_3, IC_4	• Shutter set : defect • Two layers : contact failure
② No-slit shutter in all exposure modes. (Min. aperture)	33			• Flex PCB-A IC_4	• Two layers : contact failure
(3) 4-5Ev under with "– –" in aperture display (Min. aperture, normal shutter speed) 	33			• BL contact holder set R_{20}, R_{21}, R_{22}	• BL contacts (L_1 to L_5) : contact failure (stain) • BL contact holder (0150) : defect • Between BL contact (0150) and flex PCB-A (0401) : soldering failure • Contacts on lens side : stain • Lens's PCB : defect

Symptoms	Page	Switches	Lead wires	Electrical elements	Mechanical and other causes
(4) Underexposure regardless of out of range (over) display. (Fastest shutter speed and min aperture)  	33			• Flex PCB-A R_3, R_4, VR_1 C_6, IC_2	
(5) AE under in low luminance. (Normal AE in mid/high luminance)	33			• Flex PCB-A R_5, C_7, IC_2	
■ Overexposure					
(1) Overexposure with normal display. (Max aperture regardless of setting)  	34			• SL_3 • Flex PCB-A IC_1	• Aperture control base plate set (0256) : defect • SL-3 magnet spring in aperture stop magnet set 0472 : breakage →Aperture ring not operated manually
(2) Slower shutter speed w/normal display in all modes. (Spaces between frames are exposed)	34		⑭(Yellow)		• Shutter set : defect (SL-5 no separation)
(3) ISO mis-setting to slow shutter speed side w/DX coded film.	34			• Flex PCB-D IC_5	• ISO : User's mis-setting • DX code : mis-reading • GAS contact : defect
(4) Excessive AE over regardless of out of range (under) display.  	35			• Flex PCB-A SPC_1, R_3, R_7 IC_1, IC_2, IC_4 • Flex PCB-B IC_6	
■ Uneven exposure					
(1) Uneven shutter speed/aperture control with normal display. Shutter speed varies each time in M mode.	35			• SL_5	• Shutter set : installing failure • Claw of aperture ring (0250) : deformation • Aperture control base plate : defect
(2) Uneven metered value display and irregular control.	35			• Flex PCB-A SPC_1, C_{36} IC_2	• Sponge (4511) : missing, deformation
(3) Metered values not change regardless of luminance change.	36			• SPC_2	

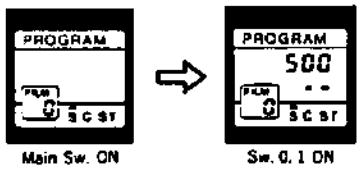
Symptoms	Page	Switches	Lead wires	Electrical elements	Mechanical and other causes
■ Other exposure failure					
(1) 1/30 sec or faster shutter speedi is fixed at 1/30 in all exposure modes. (Normal display)	36		13 (White)	• SL_4 • Flex PCB-A IC_1, IC_4	• Two layers : contact failure
(2) Highest shutter speed is about 0.5-1ms faster/slower (w/normal display).	36			• SL_5 • Flex PCB-A IC_4	• Shutter set : defect
(3) Unadjustable AE	36			• Flex PCB-A VR_2, VR_3, IC_2	• A/D conversion reference voltage. 1152mV : adjusting failure
(4) Aperture diameter not fully open regardless of full-open setting with normal display.	36				• Aperture ring (0250) : off position • Aperture control base plate set (0256) : defect
(5) Fast shutter speed at bulb setting. ("blub" on shutter speed display)	37		56 (Green) 57 (Orange)	• PCB-C (0451) R_{44}, R_{45}, Q_{18}, Q_{19}	
(6) Fixed shutter speed at 1/100 sec with ϟ LED blinking in all exposure modes.	37			• Flex PCB-A IC_1, IC_4	

3. Display failure only (Normal winding and shutter releasing)

Symptoms	Page	Switches	Lead wires	Electrical elements	Mechanical and other causes
(1) All displays OFF in viewfinder LCD only. Normal display (Sw. 0, 1 ON) 	38				• In-finder mirror-A, -B (5813, 5814) : off position • In-finder set (0582) : defect
(2) Some segments OFF in LCD.  Sw. 0, 1 ON					
① The same segments OFF (on body and in finder LCD).	38			• Flex PCB-A IC_3	
② Some segments OFF on body LCD.	38			• LCD_1 (4245)	• Connector (4248) : twist, stain
③ Some segments OFF in finder LCD.	38				• Flex PCB-A and LCD_2 : contact failure
(3) All display blink or are unstable.					
① "ISO" display blinks for 10 sec by attaching battery holder set or turning P call key ON.  After 10sec. Sw. 0, 1 ON (Normal display)	39			• Flex PCB-A IC_1, IC_4 • Flex PCB-B D_{11} • Flex PCB-D IC_5 • Converter PCB (0450)	• Lithium batterie : exhausted • Between converter PCB & flex PCB-B : soldering failure • Three layers : contact failure
② Mis-indication (flicker/unevenness)	39			• Flex PCB-A XL_2, (XL), C_{11} C_{12}, IC_3	
③ All displays blink (operating BC lock)	39			• Flex PCB-A IC_4	
(4) All displays ON. (Possibly ON dimly)	39			• Flex PCB-A (C_3), IC_2 • R_4-BL contact holder : short circuit	
(5) All displays OFF.	39			• Flex PCB-A R_6, IC_2, IC_3	
(6) "FILM" blinks by Sw. 0/1 ON.  Main Sw. ON Sw. 0, 1 ON	40	(REW 2)	㉓ (Orange)		

Symptoms	Page	Switches	Lead wires	Electrical elements	Mechanical and other causes
(7) Metered value ON by main Sw. ON.  	40	S_2 S_1 AEL		• Flex PCB-A C_4	• GND contact on release contact plate set (0423) : deformation
(8) Viewfinder LED indication failure (Other operations are all normal.)					
① One of "▷ ○ ◁" LEDs not glow.	40		39 (Purple) 40 (White) 41 (Blue)	• Flex PCB-B R_{13}, R_{14}, R_{15} IC_4	• In-finder set 0582 : defect • Two layers : contact failure
② All LEDs ("▷ ○ ◁") not glow.	40		37 (Orange)		
③ "▷ ○" LEDs glow simultaneously.	41			• Flex PCB-B IC_6	• Soldering in in-finder set : short circuit
④ "○ ◁" LEDs glow simultaneously.	41				• Soldering in in-finder set : short circuit
⑤ Flash ready LED does not blink although X-sync speed is set.	41		35 (Red) 38 (Green)	• Flex PCB-A IC_3	• In-finder set : defect
⑥ Viewfinder indication LED does not glow.	41		35 (Red) 36 (Yellow)	• Flex PCB-A IC_4	• In-finder set : defect
⑦ Flash-signal LED "ϟ" glows with viewfinder indication LED ON	41				• Between ℓ_{35} and ℓ_{36} : short circuit (in-finder set : short circuit)
(9) Other display failure.					
① Self-timer indication ON when releasing.	41			• Flex PCB-A IC_4	
② Irregular frame number display during winding operation (Display OFF at 10th frame, segments OFF at 20th frame, etc.)	42			• Flex PCB-A IC_3	
③ Irregular frame number appears on body LCD w/in 4 sec after main Sw. LOCK→ON	42			• Flex PCB-A IC_3	
④ Self-timer indication ON by Sw. 0/1 ON.	42			• Flex PCB-A IC_4	

4. AF/Manual focusing failure

Symptoms	Page	Switches	Lead wires	Electrical elements	Mechanical and other causes
Focus indication LED failure only·····See 3 Display failure (8).					
■AF and manual focusing failure	Low contrast scanning : Lens moves at a swoop to ∞ or minimum distance side.				
(1) Always "▷ ◁" LEDs blink. (low contrast scanning in AF mode)	43			• Converter PCB (0450) • Flex PCB-B IC_6, IC_7, IC_8	• AF sensor, Sub-mirror, Mirror : stain
(2) No focusing with "– – " in aperture display on body LCD. (All LEDs "▷ ○ ◁" do not glow, Shutter is releasable regardless of out of focus in AF mode.) 	43			• BL contact holder set R_{20}, R_{21}, R_{22}	• BL contacts (L_1 to L_5) : contact failure (stain) • BL contact holder (0150) : defect • Between BL contact holder (0401) and flex PCB-A (0401) : soldering failure • Contacts on lens side : stain • Lens's PCB : defect
(3) No focusing, all LEDs "▷ ○ ◁" not glow.	43			• Flex PCB-A IC_1 • Flex PCB-B IC_5	• Three layers : contact failure
(4) No focusing with "▷ ○ ◁" glowing or blinking (When main Sw., Sw. 0/1 ON, AF motor possibly keeps running w/all LEDs ON.)	43			• Flex PCB-B IC_6	
(5) Regardless of out of focus on view-finder, in-focus LED "○" glows.	44			• Flex PCB-B VR_1	• AF sensor filter : stain, dust
(6) "▷" LED glows regardless of low contrast subject* (No "▷ ◁" LEDs blink) ※e. g. white paper.	44			• Flex PCB-B IC_6	• AF sensor filter : stain, dust
(7) Shutter releaseable by Sw. 2 ON with "▷ ◁" blinking in AF mode.	44			• Flex PCB-A IC_1	
■AF operation failure (Normal manual focusing)					
(1) Lens does not move in AF mode.	44	1 (AF/M)	⑫(Grey) 45(Black) 63(Brown) M_2 lead wire	• Flex PCB-A R_{31}, IC_1 • Flex PCB-B IC_6 • M_2	
(2) Lens does not move from near side to infinity side. (With 50mm/f : 1.7 lens)	45			• Flex PCB-B Q_{12}, Q_{13}, IC_6 IC_5	
(3) Lens does not move from infinity to near side. (With 50mm/f : 1.7 lens)	45			• Flex PCB-B Q_{11}, Q_{14}, IC_6 IC_5	
(4) Lens (AF motor) moves slightly when-ever Sw. 1 ON.	45			• Flex PCB-A C_{13}, C_{13}, C_{16}, IC_4 • Flex PCB-B IC_6 • PI-2	• Between flex PCB-B and PI-2 : soldering failure • Between flex PCB-G and PI-2 : soldering failure

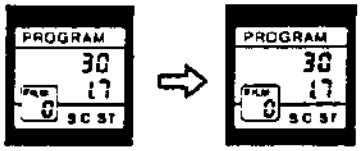
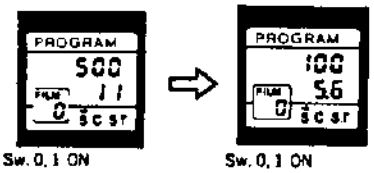
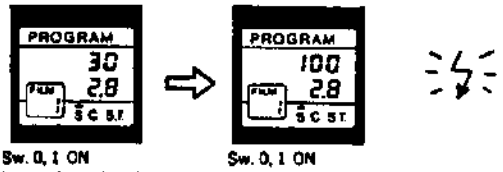
Symptoms	Page	Switches	Lead wires	Electrical elements	Mechanical and other causes
(5) AF motor continues running at minimum distance or infinity end.	45			• Converter PCB (0400) • Flex PCB-B IC_6	
(6) Slow AF operation.	45			• Flex PCB-B IC_6	
(7) Irregular sound with AF operation.					• AF drive set (0260) : oil shortage
■ Manual focus operation failure					
(1) AF motor runs idle by Sw. 1 ON in manual focus mode. (Normal operation in AF mode)	46	AF/M	12 (Grey)	• Flex PCB-A IC_1 • Flex PCB-B IC_6	• AF connecting lever (1520) : operation failure (catching)

5. Initial loading, rewinding failure, operation failure about key switch changeover, piezo buzzer, self-timer.

Symptoms	Page	Switches	Lead wires	Electrical elements	Mechanical and other causes
■ Initial loading failure only.					
(1) No initial loading by closing back cover. (Normal releasing and winding)	47	RC SLS		• Flex PCB-A IC_1	• Between flex PCB-B and Sw. SLS pins : soldering failure • Three layers : contact failure
(2) Only 1 or 2 releasing (Usually 4 releasings for initial loading).	47			• Flex PCB-A IC_1	
(3) Frame counter advances to "1" without film.	47			• Flex PCB-D IC_3	
(4) No initial loading; continuous releasing starts before frame number "1".	47			• Flex PCB-A IC_1	
■ Rewinding failure.					
(1) No rewinding (No "FILM" blinks; stand-by display remains ON).	47	REW 1 REW 2	23 (Orange) 42 (Brown)	• Flex PCB-A IC_1	
(2) Rewinding stops halfway with "FILM" blinking. (Including : motor stops w/in 8 sec after rewinding starts) Main Sw. LOCK, ON	48	REW 3 (REW 3)	㉒ (Blue) 50 (Yellow) 51 (Blue) 52 (Black)	• PCB-C (0451) Q_{17} • Rewinding base plate set (0330) Q_{18}	• Rewinding gear-D_1/-D_2 (3319/3309) : seizure • Rewinding gears : foreign substance • Rewinding changeover fork : defect • Film cartridge receiver (1072) : off position
(3) Always rewinding ON.	48			• Flex PCB-A IC_1	
■ Key switch changeover failure.					
(1) Key switch (+/−, ISO, DRIVE, MODE, UP or DOWN) does not work.	49	31, 32, 33 34, 35, 36 37, 38	38 (Yellow) 29 (Green)	Flex PCB-A IC_1	• Between flex PCB-A and -H : soldering failure
(2) +/−, ISO, MODE, DRIVE keys do not work.	50				• Between flex PCB-A and -H (at GND) : soldering failure • Key click plate (4205) screw : looseness
(3) Data display does not follow the selection of key switch.	50			• Flex PCB-A IC_1	
■ Piezo buzzer failure.					
(1) No beeping.	50	0	Buzzer lead wire (Red, Black)	• Buzzer • Flex PCB-A R_{34}, IC_1	
(2) Beeping excessively loud.	50			• Flex PCB-A R_{34}	
(3) Low beeping.	50			• Buzzer	• Adhesion of piezo buzzer : insufficient
(4) Beeping at main switch ON position.	50			• Flex PCB-A IC_1	

Symptoms	Page	Switches	Lead wires	Electrical elements	Mechanical and other causes
■ Self-timer operation failure.					
(1) Self-timer works without self-timer LED blinking.	51			• Flex PCB-A IC_4 • Flex PCB-B LD_1	
(2) No self-timer LED blinks. (30msec is fixed as the fastest regardless of faster shutter speed setting)	51			• Flex PCB-A IC_1, IC_4	

6. Operation failure using accessories.

Symptoms	Page	Switches	Lead wires	Electrical elements	Mechanical and other causes
■ Operation failure using exclusive flash unit.					
(1) Data display failure with fully charged flash					
① Shutter speed does not change to X-sync speed (100); no flash ready LED "ϟ" blinking.  Sw. 0, 1 ON Incomplete charging　Sw. 0, 1 ON Complete charging	52		32 (White)	• Flex PCB-A IC_4	• F_2 terminal : contact failure • ℓ_{19}, ℓ_{20} : reversed
② Flash ready LED "ϟ" does not glow/ blink although X-sync speed is set.  Sw. 0, 1 ON Incomplete charging　Sw. 0, 1 ON Complete charging	52		35 (Red) 38 (Green)	• Flex PCB-A IC_3	• In-finder set : defect
③ Flash ready LED "ϟ" remains ON during releasing.	52			• Flex PCB-A IC_3	
④ X-sync speed does not change from 60 to 100 (100 to 60) although luminance is changed in P mode.	52			• Flex PCB-A IC_1	
(2) Firing failure in flash mode with fully charged flash unit (Normal X-sync speed display).  Sw. 0, 1 ON Incomplete charging　Sw. 0, 1 ON Complete charging					
① No firing.	53	X_1 X_2	16, 18, 30 (Purple) 17, 20, 31 (Black)		• F_1 terminal : contact failure
② Always flash fires fully.	53		1 (Grey)	• SPC_2 • Flex PCB-A IC_1, IC_2, IC_4	
③ Always brief-firing	53			• Flex PCB-A R_9, C_8, IC_2	
④ Unstable firing (too much or too little)	53			• Flex PCB-A C_8, VR_3	
⑤ Always flash is controlled 1-1.5Ev under.	53			• VR_3: adjusting failure	• Sponge (4511) : missing, deformation
(3) Under exposure in flash-photography. (W/X-sync speed disply, normal firing)	54				• See "Underexposure (3)" • Power-level selector : remains LOW
(4) AF illuminator does not fire in low light condition w/Sw. 1 ON in AF mode.	54		34 (Blue)	• Flex PCB-B IC_4	• F_2 terminal : contact failure • Two layers : contact failure

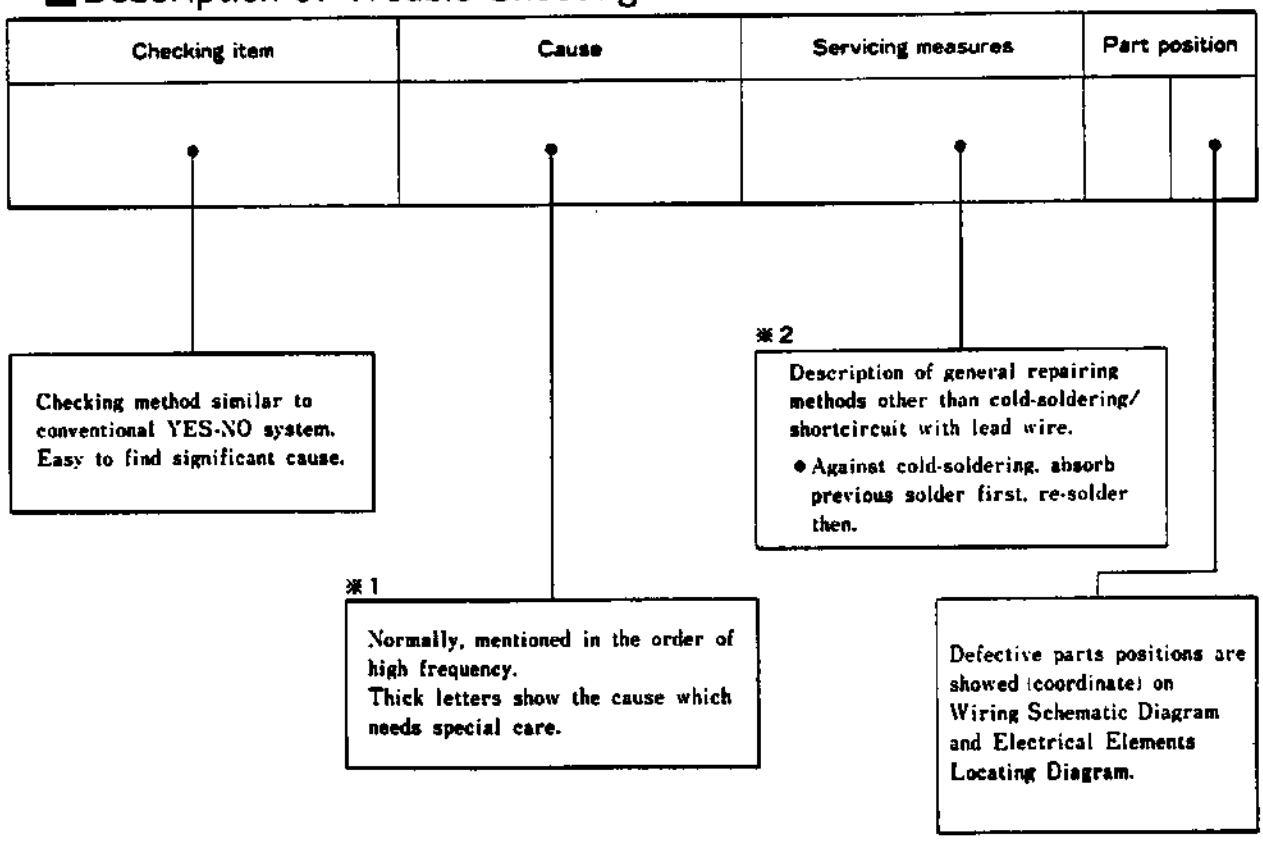
Symptoms	Page	Switches	Lead wires	Electrical elements	Mechanical and other causes
■ Operation failure using PROGRAM BACK.					
(1) No imprinting	54			• Flex PCB-A IC_1 • Flex PCB-D R_{31}	• Back contacts : contact failure • Three layers : contact failure
(2) Intervalometer operation failure.	54				• Back contacts : contact failure • Three layers : contact failure
(3) Shutter releasing failure	55				• Program Back 70 : defect
(4) Data transmission failure using PROGRAM	55				• Back contacts : contact failure • Three layers : contact failure

7. Operation failures about CAS code, AE lock, Sharp battery draining, Light leakage, Uneven space between frames.

Symptom	Page	Switches	Lead wires	Electrical elements	Mechanical and other causes
■ Mis-decoding of CAS code.					
(1) Incorrect setting of film speed (ISO). (One roll of film is all under/over-exposed).	56			• Flex PCB-D IC_5	• DX-coded film : defect • CAS contacts : contact failure
(2) "ISO 5000" appears in body LCD when initial loading.					• BL contact PCB : soldering failure • Between flex PCB-B and -D : soldering failure
■ AE lock failure.					
(1) Unlocked.	56	AEL		• Flex PCB-A IC_1	• Between Sw. AEL and flex PCB-A : soldering failure
(2) AE remains locked.	56	(AEL)		• Flex PCB-A IC_1	
(3) Shutter releases by AE lock Sw. ON.	56			• Flex PCB-A IC_1	
(4) Winding motor runs idle for 1.2 sec by AE lock Sw. ON.	56			• Flex PCB-A IC_1	
■ Battery drains sharply (See p. 71.)					
(1) Motor driving transistor heating (partly deforming front side cover-A 1015)					
① One of transistors for AF motor is heated.	57		61(Red) 62(Black)	D_{15} IC_9	• IC_9 ⑪ – Flex PCB-B : short circuit* ※only for flex PCB-B No. 4222-01
② One of transistors for winding motor is heated.	57		⑤(Red) ⑦(Black)	• Converter PCB (0450)	• Lead wire from motor and flex PCB-B printed circuit : short circuit
(2) Great current consumption when re-/winding.	57				• Sprocket axis set (0352) : defect • Motor axis : stiffness • Winding base plate set : oil shortage • Film cartridge receiver (1072) : off position
(3) Current leakage and short circuit.	57	See p. 57 for repair.			
■ Light leakage	59	See p. 59 for repair.			
■ Uneven spaces between frames	60	See p. 60 for repair.			

2 TROUBLE SHOOTING MANUAL

■Description of Trouble Shooting Manual

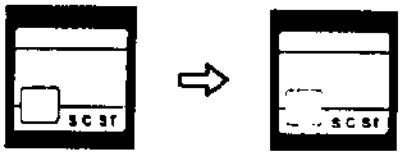

Checking item
Cause
Servicing measures
Part position
Checking method similar to conventional YES-NO system. Easy to find significant cause.
※2
Description of general repairing methods other than cold-soldering/ shortcircuit with lead wire.
● Against cold-soldering, absorb previous solder first, re-solder then.
※1
Normally, mentioned in the order of high frequency.
Thick letters show the cause which needs special care.
Defective parts positions are showed (coordinate) on Wiring Schematic Diagram and Electrical Elements Locating Diagram.

※1 : • Disconnection of lead wire includes soldering failure, also.
• Short circuit of lead wire with GND means short circuit with mechanical parts at soldering/catching part.

※2 : See Service Manual Supplymentary Information No. 2072-001 for precaution when replacing flex PC board A set.

1. Shutter releasing/winding failure

■ Trouble symptoms with main Sw. LOCK



Main Sw. LOCK　　Main Sw., Sw. 0/1/2 ON

(1) Camera not powered at all and no LCD indication
(Display remains OFF and no releasing by Sw. 0/1/2 ON)

Checking item	Causes	Servicing measures	Part position	
	Converter PCB : defect	Replace converter PCB (0450)		
	Between converter PCB pins and flex PCB-B : soldering failure	Re-solder (on converter PCB, also)		
	Contacts and spring contacts of battery holder set : stain, off position	Replace 2072-0120-01 by -02, or clean contacts		
	ℓ_2 (Red) : disconnection		G-2	G'-2
	ℓ_3 (Black) : disconnection		G-4	G'-4
	XL_1 : defect, soldering failure		L-2	L'-2
	D_{12}, D_{13} : defect, soldering failure		O-2	
	Battery holder base plate (+), (−) contacts : stain			
	Flex PCB-A : defect	Replace flex PCB-A (0401)		
	Flex PCB-B : defect	Replace flex PCB-B (0402)		

Main Sw. LOCK/ON

(2) Motor running and stand-by display remains ON by attaching battery holder

Checking item	Causes	Servicing measures	Part position	
	Converter PCB : defect	Replace converter PCB (0450)		
	IC_9 : defect, IC_9 ⑤−⑥ : short circuit	Replace IC_9 or replace flex PCB-B	Q-2	

(3) Irregular display* with no releasing/winding
(Irregular display with main Sw. LOCK/ON, Sw. 0/1 ON; no releasing with Sw. 2 ON; winding motor may run irregularly)

Irregular display···All display ON, all display OFF, only frame counter display ON, etc.

Main Sw. LOCK/ON, Sw. 0/1 ON

Checking item	Causes	Servicing measures	Part position	
	Converter PCB : defect	Replace converter PCB (0450)		
	Between converter PCB pins and flex PCB-B : soldering failure	Re-solder (on converter PCB, also)		
	C_3 : defect, soldering failure		M-3	M'-3
	ℓ_{42} (Blue) : short circuit with GND ; disconnection		F-4	F'-4
	ℓ_{48} (Orange/Red) : disconnection		C-15	
	Sw. 30 : remains ON ; contact failure			
	C_8 : soldering failure ; defect		M-2	M'-2
	C_{34}, C_{39} : soldering failure ; defect		L-2	L'-2
	R_1 : soldering failure ; defect		L-3	M'-3
	R_{27} : soldering failure ; defect		O-2	
	R_{33} : soldering failure ; defect		L-3	L'-3
	XL_1 : soldering failure ; defect		L-2	L'-2
	Q_3 : soldering failure ; defect (p. 79)		O-2	
	IC_1 ③, ④, ⑫, ⑮, ㉒ : soldering failure		L-3	L'-3
	IC_4 ③ : soldering failure		K-3	K'-3
	Two layers : contact failure			
	Flex PCB-A : defect	Replace flex PCB-A (0401)		
	Flex PCB-B : defect	Replace flex PCB-B (0402)		

■ Trouble symptoms with main Sw. ON

(1) Film end display ON within 1.2 sec after main Sw. ON
① After 1.2 sec of motor running, film end display appears

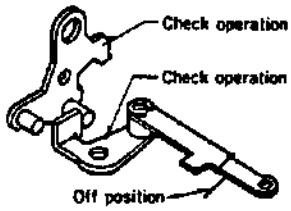
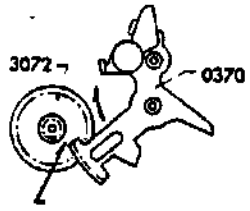
Main Sw. LOCK

⇨

Main Sw. ON

Checking item	Causes	Servicing measures	Part position	
Check conductivity of Sw. 4 Sw. 4 OFF when winding motor stops. No →	Sw. 4 : remains ON (p. 74)	Re-form contact		
	ℓ_{52} (Yellow) : short circuit with GND		C-3	C'-3
Yes	Winding base plate set : defect, screw off • Among gears : foreign substance • Winding stop cam and winding stop lever : foreign substance • Winding stop lever spring (3014) : off position • Winding stop lever : stiffness • Aperture return lever : stopper off	Replace winding base plate set (0304), disassemble and check		
	Sprocket axis set (0352) : defect	Replace sprocket axis set (new type) (p. 64)		
*High possibility to occur with film loaded (caused by ℓ_{46}, ℓ_{47}, Q_{35}, R_{31})	*Q_{13} : soldering failure ; ⓒ − ⓑ short circuit (p. 79)		Rewinding base plate (0330)	
	*R_{53} : soldering failure ; defect			

To be continued to next page

Checking item	Causes	Servicing measures	Part position	
	Sw. 400 : remains ON	Re-form contact		
	ℓ_{22} (Blue) : disconnection		A-11	A'-13
	ℓ_{40} (Yellow) : short circuit with GND		C-3	C'-3
	※ℓ_{46} (Brown) : disconnection		B-12	B'-12
	※ℓ_{47} (Black) : disconnection		D-10	D'-10
	Sw. REW$_3$: contact failure (p. 75)			
	Converter PCB : defect	Replace converter PCB (0450)		
	Between converter PCB pins and flex PCB-B : soldering failure	Re-solder (on converter PCB, also)		
During winding or after shutter traveling, film end display appears High possibility to occur with film loaded 	Motor set (M_1) : defect	Replace motor set (See p. 63)		
	Motor contact plate set (0311) : stain			
	Aperture return lever : stiffness • Aperture stop magnet : oil shortage • Spring : off	Re-form lever ; replace aperture stop magnet set (0472) ; apply grease		
	Diaphragm return spring (3066) : off position	Disassemble winding base plate set and check		
	Drive gear spring (3075) : off position			
	Shutter : defect	Replace shutter (p. 66)		
May occur with pentaprism side down 	Winding stop release sector (0370) : disengagement from drive gear (3072)	Replace winding stop release sector (0370)		

② Film end display appears with no motor running and mirror up
(Metered values appear for 1.2 sec after main Sw. ON → LOCK → ON, or P call key ON. Then film end display appears.)

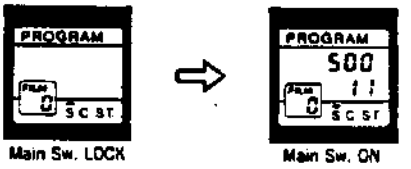
Checking item	Causes	Servicing measures	Part position	
	Q_2 : defect ; Ⓔ – Ⓑ short circuit (p. 79)		R-3	
	Q_3 : defect ; Ⓔ – Ⓑ short circuit (p. 79)		Q-3	
	R_{19} : soldering failure ; defect		Q-3	
	Converter PCB : defect	Replace converter PCB (0450)		
	Between converter PCB pins and flex PCB-B : soldering failure	Re-solder (on converter PCB, also)		
	IC_1 ⑱ : soldering failure		L-3	L'-3
	IC_9 ⑥, ⑦, ⑪, ⑫ : soldering failure		Q-2	
	Flex PCB-A : defect	Replace flex PCB-A (0401)		
	Flex PCB-B : defect	Replace flex PCB-B (0402)		

③ After winding motor running for 1.2 sec, display ON with mirror up

Checking item	Causes	Servicing measures	Part position	
Motor runs idle for 1.2 sec. → No	Gear on winding motor : falling/riveting failure	Replace motor set (0424) (p. 63)		
Yes →	Bevel gear in clutch base plate (0215) : stiffness Mirror-up-lever-roller : seizure	Replace clutch base plate (0215)		
	Q_1 : defect ; Ⓑ – Ⓒ short circuit (p. 79)		Q-3	
	Flex PCB-B : defect	Replace flex PCB-B (0402)		

④ By film loading winding motor runs for 1.2 sec and film end display appears
(May occur during winding)

Checking item	Causes	Servicing measures	Part position	
Check if rewinding fork rotates smoothly when removing film softly at film end display ON. → No	Gears for rewinding : operation failure • Rewinding gear-D_1 (3319), -D_2 (3309) : grease shortage • Rewinding gear-E set (0334) : operation failure • Rewinding gear-A (3306), B (3307) : foreign substance • Rewinding reduction gear (3339, 3340) : foreign substance	Replace winding base plate set (0304), or disassemble to check		
Yes →	Q_{10} : defect ; Ⓔ – Ⓑ short circuit (p. 79)		Rewinding base plate (0330)	
	R_{31} : soldering failure ; defect		Rewinding base plate (0330)	
	ℓ_{46} (Brown) : disconnection		B-12	B'-12
	ℓ_{47} (Black) : disconnection		D-10	D'-10
	Motor set (M_1) : defect	See p. 63		
	Sprocket axis : defect			

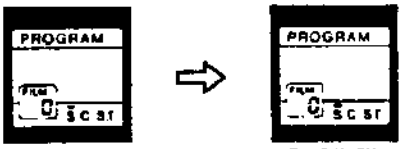


Main Sw. LOCK　　Main Sw. ON

(2) Shutter releasing by turning main Sw. ON

Checking item	Causes	Servicing measures	Part position	
	ℓ_{28} (Gray) : short circuit with GND		D-6	D'-6
	ℓ_{53} (Gray) : short circuit with GND		E-15	E'-15
	ℓ_{54} (Gray) : short circuit with GND		E-16	D'-17
	Sw. 2 : remains ON Release contact plate (0423) : defect	Replace release contact plate (0423)		
	Flex PCB-C (0451) : short circuit			
	Remote control terminal set (0153) : short circuit			

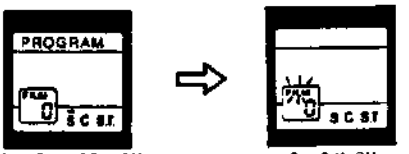
■ Trouble symptoms with Sw. 0/1 ON



Main Sw. ON　　Sw. 0/1 ON

(1) No metered value display with Sw. 0 /1 ON
(Possibly no shutter releasing with Sw. 2 ON)

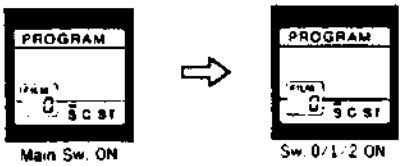
Checking item	Causes	Servicing measures	Part position	
Normal metered value display with control key/AE lock key ON	Sw. 0/1 : contact failure (p. 74)	Replace release contact plate (0423)		
	ℓ_{27} (Black) : disconnection		C-6	B'-6
	ℓ_{45} (Black) : disconnection		C-7	C'-7
	ℓ_{42} (Brown) : disconnection			
	R_{38}, R_{34} : soldering failure : defect			H'-3
	Main Sw. : contact failure	Re-form contact, or clean printed wire		
	R_{27} : soldering failure ; defect		O-2	
	Q_5 : defect (p. 79)		O-2	
	IC_1 ⑱, ⑲, ㊾ : soldering failure		L-3	L'-3
	IC_4 ㉕ : soldering failure			
	Two layers : contact failure			
	Flex PCB-A : defect	Replace flex PCB-A (0401)		
	Flex PCB-B : defect	Replace flex PCB-B (0402)		



Main Sw. LOCK/ON　　Sw. 0/1 ON

(2) Only "FILM" blinks and no shutter releasing by Sw. 0/1 ON

Checking item	Causes	Servicing measures	Part position	
	Sw. REW_1 : remains ON	Re-form contact		
	ℓ_{42} (Brown) : short circuit with GND		A-3	A'-3
	ℓ_{48} (Brown/Orange) : short circuit with GND		B-12	B'-12
	Springs for rewinding (3324, 3329) : off position			
	IC_1 : defect	Replace flex PCB-A (0401)	L-3	L'-3

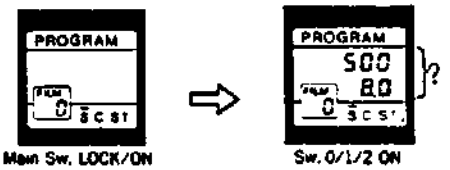


Main Sw. ON　　Sw. 0/1/2 ON

(3) Normal operation for 20 sec after main Sw./P call key ON.
Then, no releasing/winding.
(No metered values display with Sw. 0/1/2 ON, at 20 sec and after)

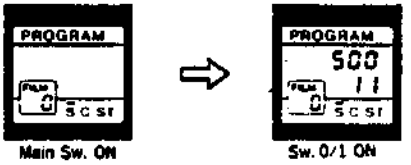
Checking item	Causes	Servicing measures	Part position	
Should not connect on reverse side. If connected, cut here. ※Possibly occurs on 2072-4222-01 (having printed wire on reverse side)	C_3 : soldering failure ; defect		M-3	M'-3
	R_1 : soldering failure : defect		L-3	L'-3
	R_{33} : soldering failure : defect		L-3	L'-3
	Q_{16} : soldering failure : defect (p. 79)		M-3	M'-3
	IC_1 ㉕ : soldering failure			
	Flex PCB-A (0401) : connection of printed wire (left fig)	See left fig		
	Flex PCB-A : defect	Replace flex PCB-A (0401)		

(4) Unstable display* with Sw. 0/1 ON, no shutter releasing with Sw. 2 ON
(only when lens attached)



Checking item	Causes	Servicing measures	Part position	
	BL contact L_4-L_5 for BL contact holder (0150) and flex PCB-A : short circuit (See left fig.)	Check soldering and printed wire on L_4-L_5.		

(5) Shutter releasing by Sw. 0/1 ON (with normal display)

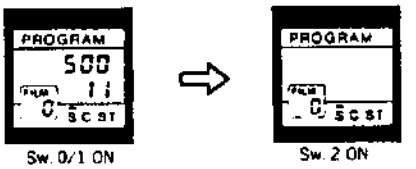


Checking item	Causes	Servicing measures	Part position	
	IC_1 ⑯-⑰ : short circuit		L-3	L'-3
	Remote control terminal set (0153) : short circuit			
	Flex PCB-A : defect	Replace flex PCB-A (0401)		

■ Trouble symptoms with Sw. 2 ON

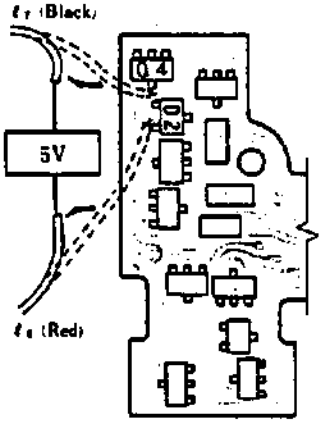
(1) **Metered values disappear (stand-by display appears) with Sw. 2 ON.**

① **By Sw. 2 ON, metered values disappear without winding motor running (Winding motor may run slightly.)**



Sw. 0/1 ON　　Sw. 2 ON

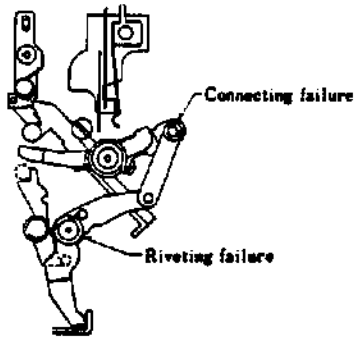
Checking item	Causes	Servicing measures	Part position	
Metered values disappear within 0.5 sec/at once when Sw. 2 ON	Motor set (0424) : defect (PCB beneath motor set : stain)	(See p. 63)		
	Contacts of motor contact plate set (0311) : stain			
	ℓ_6 (Red) : disconnection (on M_1 contact side)		E-2	E'-2
	ℓ_7 (Black) : disconnection (on M_1 contact side)		E-2	E'-2
	Internal battery resistance : high	Replace batteries by new ones		
Check motor set (M_1) for driving • Winding motor runs 5V is added to ℓ_6, ℓ_7	Q_1, Ⓔ−Ⓑ : short circuit ; defect (p. 79)		Q-3	
	Q_2 Ⓔ−Ⓒ, Ⓑ−Ⓒ : short circuit ; defect (p. 79)		R-3	
	Q_3 Ⓔ−Ⓒ, Ⓑ−Ⓒ : short circuit ; defect (p. 79)		Q-3	
	Q_4 : soldering failure ; Ⓔ−Ⓑ short circuit (p. 79)		R-3	
	Converter PCB (0450) : defect	Re-solder on GND, Vcc, or replace converter PCB (0450).		
	ℓ_4 (Red) : disconnection		F-5	E'-5
	ℓ_5 (Black) : disconnection		F-5	F'-5
	ℓ_6 (Red) : disconnection (on flex PCB-B side)		E-2	E'-2
	ℓ_7 (Black) : disconnection ; short circuit with GND		E-2	E'-2
	R_{10} : soldering failure ; defect		Q-3	
	IC_9 ④, ⑨, ⑩ : soldering failure	Check soldering at IC_9, replace IC_9, or replace flex PCB-B (0402)	Q-2	
	IC_1 ⑰ : soldering failure		L-3	L'-3
	Two layers : contact failure			
	Flex PCB-A : defect	Replace flex PCB-A (0401)		
	Flex PCB-B : defect	Replace flex PCB-B (0402)		
Metered values remain ON during Sw. 2 ON	ℓ_{24} (Orange) : short circuit with GND		C-4	C'-4
	Sw. 40 : remains ON (p. 74)	Re-form contact, or adjust ON-timing		
Winding motor runs slightly by Sw. 2 ON	Lead wire : catching between motor gear and bottom cover			
	Aperture control base plate set (0256) : foreign substance			
	Gear in aperture charge base plate set (0254) : operation failure			
Winding motor runs idle for 0.5 sec by Sw. 2 ON	Motor gear set (0248) : off position	Tighten screws, and apply B-10		



② By Sw. 2 ON, metered values disappear (stand-by display ON) with mirror up, no winding-motor running (including : mirror half way up)

Checking item	Causes	Servicing measures	Part position	
Shutter travels after mirror up	Sw. 40 : contact failure (p. 74)	Sw. 40 and ℓ_{24} : disconnection		
	ℓ_{24} (Orange) : disconnection		C-4	C'-4
	Q_1 Ⓔ−Ⓒ, Ⓒ−Ⓑ : short circuit ; defect (p. 79)		Q-3	
	D_{12} : defect (short circuit)		Q-2	
	IC_9 : defect	Replace IC_9 or flex PCB-B (0402)	Q-2	
Mirror half way up	IC_9 ③−④ : short circuit	Check soldering of IC_9, or replace IC_9/flex PCB-B (0402)	Q-2	

③ By Sw. 2 ON, winding motor runs for 0.5 sec and stops with no mirror up, then metered values disappear.

Checking item	Causes	Servicing measures	Part position	
	Mirror up lever-A axis : riveting failure (See left fig.)	Replace mirror box set (0500)		
	Connecting lever of mirror up lever-A and -B : connecting failure (See left fig.)	Replace mirror box set (0500)		
	Motor gear set (0248) : looseness of screw			

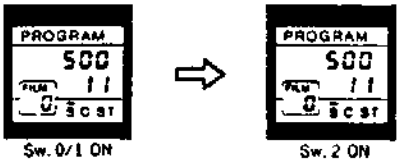
④ Shutter releases normally once by Sw. 2 ON, then at winding completion, metered values disappear and no more releasing.

Checking item	Causes	Servicing measures	Part position	
	IC_9 ⑦−⑧ : short circuit	Check soldering of IC_9, or replace IC_9/flex PCB-B (0402)	Q-2	

⑤ When Sw. 2 ON in low temperature (about -20°C), metered value or all LCDs disappear within 1 sec and no shutter releasing.

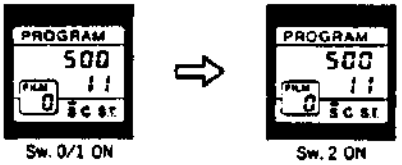
Checking item	Causes	Servicing measures	Part position
	Motor contact plate set (0311) : narrow space between contacts	Replace motor contact plate set (0311)	

(2) By Sw. 2 ON, no more running/shutter releasing and normal display



Checking item	Causes	Servicing measures	Part position	
	Sw. 2 : contact failure (p. 74)			
	ℓ_{26} (Gray) : disconnection		D-6	D'-6
	ℓ_{27} (Black) : disconnection		C-6	B'-6
	ℓ_{52} (Black) : disconnection		D-15	D'-15
	ℓ_{53} (Gray) : disconnection		E-15	E'-15
	ℓ_{54} (Gray) : disconnection		E-16	D'-17
	ℓ_{55} (Brown) : disconnection		D-15	C'-16
	Flex PCB-C : defect • R_{45}, R_{46}, R_{47} : soldering failure • C_{27} : defect (short circuit) • Q_{18} : soldering failure	Replace flex PCB-C (0451)		
	Release PCB & flex PCB-A : soldering failure			
	Release contact plate (0423) : defect			
	R_{53} : soldering failure ; defect			J'-2
	IC_1 ㉘ : soldering failure		L-3	L'-3
	Flex PCB-A : defect	Replace flex PCB-A (0401)		
Unreleasable only when using remote control	ℓ_{58} (Orange) : disconnection		C-16	C'-15

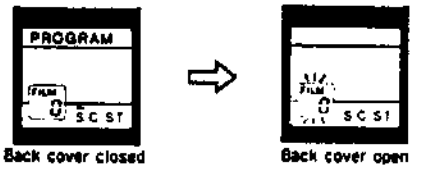
(3) By Sw. 2 ON, mirror up & no more winding (normal display)
※Whenever Sw.2 ON, mirror moves, winding motor runs slightly.



Checking item	Causes	Servicing measures	Part position	
	Sw. 4 : contact failure (p. 74)			
	Sw. 400 : contact failure (p. 74)			
	ℓ_{25} (Yellow) : disconnection		C-3	C'-3
	ℓ_{44} (Yellow) : disconnection		C-3	C'-3
	Sw. 400 : ON timing failure			
	IC_1 ㉔ : contact failure		L-3	L'-3
	Winding stop lever spring (3074) : off position			
	Diaphragm return spring (3066) : breakage			
	Flex PCB-A : defect	Replace flex PCB-A (0401)		

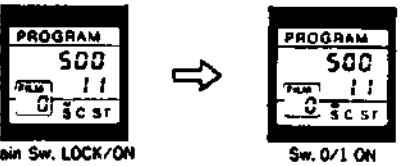
■ Other releasing/winding failure

(1) After rewinding completion, by opening back cover, film end display appears with furthermore rewinding



Checking item	Causes	Servicing measures	Part position	
	Shutter charge lever set (0317) : defect • Roller : inclined ; catching • Riveting failure	Replace shutter charge lever set (0317)		
	Charge spring (3021) : off position			
	Rewinding changeover fork : deformation ; inclined	Replace winding base plate set (0304/0301) (p. 64)		
	Sprocket axis set (0352) : defect			

(2) Shutter releasing by Sw. 2 ON, regardless of main Sw. LOCK.



Checking item	Causes	Servicing measures	Part position	
	Connecting lead wire on flex PCB-A for main Sw. ON : remain			
	Printed wire on new type flex PCB-A for main Sw. : connected			
	IC_1 : defect	Replace flex PCB-A (0401)	L-3	L'-3

(3) Irregular display* with no releasing/winding
(Irregular display with main Sw. LOCK/ON, Sw. 0/1 ON ; no releasing with Sw. 2 ON ; winding motor may run irregularly)

Irregular display···All display ON, all display OFF, only frame counter display ON, etc.

Checking item	Causes	Servicing measures	Part position	
	Converter PCB : defect	Replace converter PCB (0450)		
	Between converter PCB pins and flex PCB-B : soldering failure	Re-solder (on converter PCB, also)		
	C_3 : defect, soldering failure		M-3	L'-3
	ℓ_{43} (Blue) : short circuit with GND ; disconnection		F-4	F'-4
	ℓ_{49} (Orange/Red) : disconnection		C-16	
	Sw. 30 : remains ON ; contact failure			
	C_4 : soldering failure ; defect		M-2	M'-2
	C_{31}, C_{32} : soldering failure ; defect		L-2	L'-2
	R_1 : soldering failure ; defect		L-3	M'-3
	R_{21} : soldering failure ; defect		O-2	

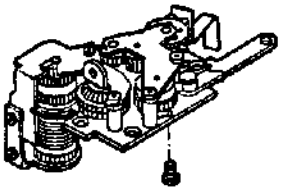
To be continued to next page

Checking item	Causes	Servicing measures	Part position	
	R_{32} : soldering failure ; defect		L-3	L'-3
	XL_1 : soldering failure ; defect		L-2	L'-2
	Q_3 : soldering failure ; defect (p. 79)		O-2	
	IC_1 ③, ④, ⑫, ㉕, ㉜ : soldering failure		L-3	L'-3
	IC_4 ③ : soldering failure		K-3	K'-3
	Two layers : contact failure		.....	.....
	Flex PCB-A defect	Replace flex PCB-A (0401)		
	Flex PCB-B : defect	Replace flex PCB-B (0402)		

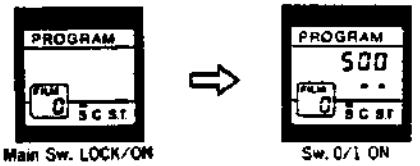
(4) Normal AF operation/display ; no releasing by Sw. 2 ON

Checking item	Causes	Servicing measures	Part position	
	IC_6 : defect	Replace flex PCB-B (0402)		

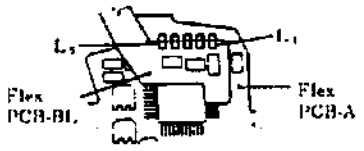
(5) Short circuit, no releasing
(Irregular display)

Checking item	Causes	Servicing measures	Part position	
 Temporary screw	Converter PCB : defect	Replace converter PCB (0450)		
	ℓ_2, ℓ_3 : reversed		G-2, 4	G'-2, 4
	ℓ_4, ℓ_5 : reversed		F-5	F'-5
	ℓ_{18} (Red) : short circuit with GND		G-9	G'-9
	Temporary screw on aperture control base plate (0256) : remains (See left fig.)			
	D_2 : defect (short circuit)		R-3	
	Flex PCB-B : defect	Replace flex PCB-B (0402)		

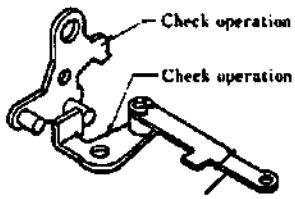
(6) No releasing with "– –" in aperture display



Main Sw. LOCK/ON → Sw. 0/1 ON

Checking item	Causes	Servicing measures	Part position	
	Flex PCB-A & flex PCB-BL : contact failure (L_1-L_2 : short circuit, L_3 : contact failure)			

(7) With lens attached, winding motor runs for 1.2 sec and film end display appears (Normal operation without lens)

Checking item	Causes	Servicing measures	Part position	
	Aperture return lever : defect	Replace aperture stop magnet (0472) Replace winding base plate set lower (0301)		

(8) Irregular sound at releasing and winding (at winding-motor operation)

Checking item	Causes	Servicing measures	Part position	
	Flex PCB-B and motor gear (0248) : contact			
	Inside of aperture base plate (0256) : oil shortage	Apply O-20 to slit plate in aperture encoder		
	Winding gears : grease shortage			
	Shutter : over-charged	Replace shutter		

(9) Shutter releasing by back cover open

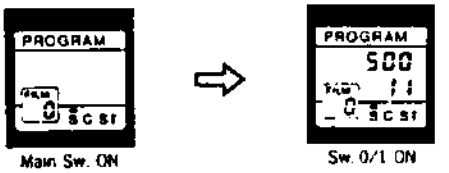
Checking item	Causes	Servicing measures	Part position	
	Sw. RC : deformation ; unstable contact (p. 76)	Replace back cover release plate set (0111)		

2. Exposure failure (AE/shutter/aperture operation failure)

■ Underexposure

(1) Underexposure (slightly exposed on negative) with normal display

① Minimum aperture regardless of setting



Main Sw. ON → Sw. 0/1 ON

Checking item	Causes	Servicing measures	Part position	
	SL-3 lead wire & flex PCB-B : soldering failure			
	SL-3 : defect (p. 77)	Replace aperture stop magnet set (0472)		
	Lead wires (Red/White) of SL-3 : reversed			
	Aperture ring claw : breakage	Replace aperture ring set (0250)		
	IC_3 ⑱ : soldering failure		L-3	L'-3
	IC_4 ⑬, ㉛ : soldering failure		K-3	K'-3
	Two layers : contact failure			
	Flex PCB-A : defect	Replace flex PCB-A (0401)		
	Flex PCB-B : defect	Replace flex PCB-B (0402)		

② Minimum aperture at other setting then maximum setting (Normal AE at maximum setting)

Checking item	Causes	Servicing measures	Part position	
	Between flex PCB-B set & -F set : soldering failure			
	PI_{-1} holder : defect	Replace aperture control base plate set (0256)		
	PI_{-1} : defect (p. 78)	Replace photointerrupter-1 set (0406)		
	C_{14} : soldering failure ; short circuit		J-3	J'-3
	C_{21} : soldering failure ; short circuit		J-3	J'-3
	IC_1 ㊸ : soldering failure		L-3	L'-3
	IC_1 ㊸-㊹ : short circuit		L-3	L'-3
	IC_4 ⑤, ⑨, ⑩, ㉙ : soldering failure		K-3	K'-3
	Two layers : contact failure			
	Flex PCB-A : defect	Replace flex PCB-A (0401)		
	Flex PCB-B : defect	Replace flex PCB-B (0402)		

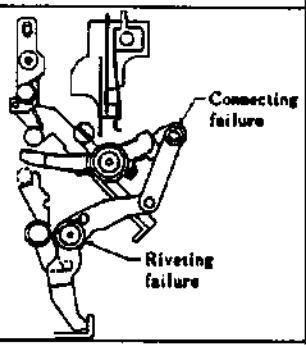
③ Fast shutter speed (Normal aperture control)

Checking item	Causes	Servicing measures	Part position
	SL-5 : magnetic failure (p. 77)	Clean SL-5, or replace shutter (p. 66)	
	Shutter set : defect (irregular speed)	Shutter set (0201) p. 50	

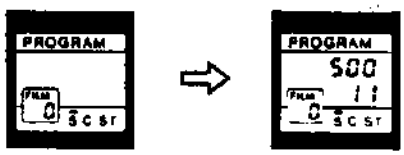
④ Underexposure in all frames
(ISO mis-reading with DX coded film)

Checking item	Causes	Servicing measures	Part position	
	CAS contact : contact failure	Clean contact, or replace flex PCB-D (0404)		
	IC_5 pins : soldering failure ; short circuit		T-5	
	Flex PCB-D : defect	Replace flex PCB-D (0404)		
No problem on camera side	DX-coded film : defect ISO : user's mis-setting			
	Under the following condition ISO setting of previous film appears regardless of normal initial loading : With film rewound, main Sw. is turned OFF and back cover is opened to exchange film. After new film is put into, back cover is closed and main Sw. is turned ON.			

⑤ No mirror up (only circumference of frame exposed)

Checking item	Causes	Servicing measures	Part position	
	Mirror holder : off position	Replace mirror box set (0500)		
	Mirror up lever : riveting failure	Replace mirror box set (0500)		

(2) No exposure regardless of normal display (No-slit shutter)
① No-slit shutter in all exposure modes (Normal aperture control)



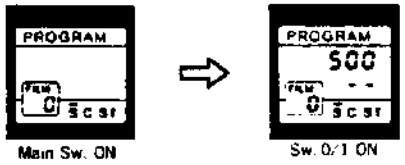
Main Sw. ON　　Sw. 0/1 ON

Checking item	Causes	Servicing measures	Part position	
	SL-5 : magnetic failure (p. 77)	Clean SL-5, or replace shutter (0201)		
	Shutter : defect	Replace shutter (0201) (p. 66)		
	ℓ_{14} (Yellow) : disconnection		G-10	G'-9
	ℓ_{15} (Red) : disconnection		G-9	G'-9
	IC_1 ㉛ : soldering failure		L-3	L'-3
	IC_4 ⑰ : soldering failure		K-3	K'-3
	Two layers : contact failure			
	Flex PCB-A : defect	Replace flex PCB-A (0401)		
	Flex PCB-B : defect	Replace flex PCB-B (0402)		
	IC_1 ㊵ : soldering failure		L-3	L'-3
	IC_4 ㉙ : soldering failure		K-3	K'-3
	Flex PCB-A : defect	Replace flex PCB-A (0401)		

② No-slit shutter in all exposure modes (Minimum aperture)

Checking item	Causes	Servicing measures	Part position	
	IC_4 ⑰ : soldering failure		K-3	K'-3
	Two layers : contact failure			
	Flex PCB-A : defect	Replace flex PCB-A (0401)		
	Flex PCB-B : defect	Replace flex PCB-B (0402)		

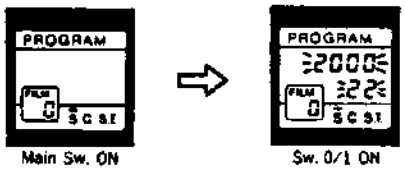
(3) 4-5Ev under with "– –" in aperture
(Minimum aperture, normal shutter speed)



Main Sw. ON　　Sw. 0/1 ON

Checking item	Causes	Servicing measures	Part position	
	BL contacts (L_1 to L_3) : contact failure (stain)			
	BL contact holder (0150) and flex PCB-A : soldering failure			
	R_{20}, R_{21}, R_{22} : soldering failure		L-6	L'-7
	BL contact holder (0150) : defect (disconnection of flex)	Replace BL contact holder set (0150)		
	Flex PCB-A : defect	Replace flex PCB-A (0401)		
Trouble on lens side	Contacts on lens side : stain			
	Lens's PCB : defect (disconnection)			

(4) Underexposure regardless of out range (over) display
(Fastest shutter speed and minimum aperture)



Main Sw. ON　　Sw. 0/1 ON

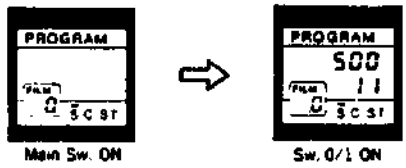
Checking item	Causes	Servicing measures	Part position	
	VR_1 : soldering failure ; defect		L-5	L'-5
	R_3 : short circuit ; defect		L-4	L'-4
	R_4 : soldering failure ; defect		L-4	L'-4
	C_8 : soldering failure ; defect		L-4	L'-4
	IC_2 ④.⑥.⑦.⑨.㉟.㊵ : soldering failure		L-5	L'-5
	Flex PCB-A : defect	Replace flex PCB-A (0401)		

(5) AE under in low luminance (Normal AE in mid/high luminance)

Checking item	Causes	Servicing measures	Part position	
	R_8 : soldering failure ; defect		M-5	M'-6
	C_7 : soldering failure ; defect		M-5	M'-5
	IC_2 ㉘ : soldering failure		L-5	L'-5
	Flex PCB-A : defect	Replace flex PCB-A (0401)		

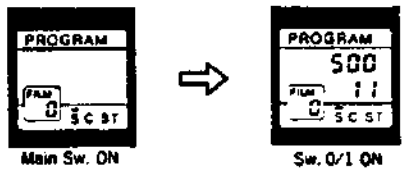
■ Overexposure

(1) Overexposure with normal display (maximum aperture regardless of setting)



Checking item	Causes	Servicing measures	Part position	
	IC_1 ⑰–㉘ : short circuit		L-3	L'-3
	IC_1 : defect	Replace flex PCB-A (0401)	L-3	L'-3
	SL-3 : magnetic failure (p. 77)			
	Aperture control base plate : defect	Replace aperture control base plate set (0256)		
	SL-3 spring : breakage	Replace aperture stop magnet set (0472)		

(2) Slower shutter speed with normal display in all exposure modes
(Spaces between frames are exposed)

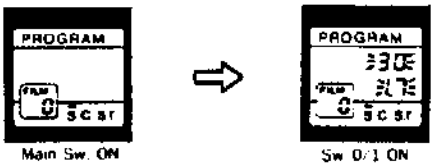


Checking item	Causes	Servicing measures	Part position	
	ℓ_{14} (Yellow) : short circuit with GND		G-10	G'-9
	Shutter set : defect (SL-5 no separation)	Replace shutter (0201) (p. 66)		

(3) ISO mis-setting to slow shutter speed side with DX coded film

Checking item	Causes	Servicing measures	Part position	
	CAS contact : contact failure	Clean contacts, or replace flex PCB-D (0404)		
	IC_5 pins : soldering failure ; short circuit		T-5	
	Flex PCB-D : defect	Replace flex PCB-D		
No problem on camera side	DX-coded film : defect ISO : user's mis-setting			
	Under the following condition, ISO setting of previous film appears regardless of normal initial loading : With film rewound, main Sw. is turned OFF and back cover is opened to exchange film. After new film is put into, back cover is closed and main Sw. is turned ON			

(4) Excessive AE over regardless of out of range (under) display, AE normal with main Sw. ON



Main Sw. ON　　Sw 0/1 ON

Checking item	Causes	Servicing measures	Part position	
	SPC$_1$: soldering failure ; short circuit		K-6	K'-6
	R_3 : soldering failure ; defect		L-4	L'-4
	R_7 : soldering failure ; defect		M-5	M'-5
	IC_2 ③.⑤.⑳.㉑.㉕.㉖ : soldering failure		L-5	L'-5
	IC_2 ④–⑤ : short circuit		L-5	L'-5
	IC_3 ⑯–⑰ : short circuit		K-5	K'-5
	IC_1 ㉛–㉜ : short circuit		L-3	L'-3
	IC_1 ㉚ : soldering failure		L-3	L'-3
	IC_4 ㉟.㊴ : soldering failure		K-3	K'-3
	IC_6 ㉗–㉙ : short circuit		P-2	
	Flex PCB-A : defect	Replace flex PCB-A (0401)		
	Flex PCB-B : defect	Replace flex PCB-B (0402)		

■ Uneven exposure

(1) Uneven shutter speed/aperture control with normal display

Checking item	Causes	Servicing measures	Part position	
Shutter speed varies in M mode. → Yes	SL-5 : magnetic failure (p. 77)	Clean SL-5, or replace shutter (0201) (p. 66)		
	Shutter : defect	Replace shutter (0201) (p. 66)		
→ No	Aperture ring claw : deformation	Replace aperture ring set (0250)		
	Slit plate in aperture control base plate set : defect			
	PI_1 : off holder			
	Backlash absorption spring : off position	Replace aperture control base plate set (0256)		
	Aperture stop gear : riveting failure	Replace aperture control base plate set (0256)		

(2) Unstable metered value display and irregular control

Checking item	Causes	Servicing measures	Part position	
	Sponge (4511) : missing, deformation	Replace sponge (4511)		
	SPC-1 : short circuit ; defect		K-6	K'-6
	C_{34} : soldering failure ; defect		M-5	M'-5
	IC_2 : defect	Replace flex PCB-A (0401)	L-5	L'-5

(3) Metered values not change regardless of luminance change

Checking item	Causes	Servicing measures	Part position	
	SPC-2 Ⓐ – Ⓚ : short circuit	Replace flex PCB-A (0401), if the problem remains with ℓ_1 off		

■ Other exposure failure

(1) 1/30 sec or faster shutter speed is fixed at 1/30 in all exposure modes (with normal display)

Checking item	Causes	Servicing measures	Part position	
Self-timer indicator ON? Yes →	SL-4 : magnetic failure (p.77)	Clean SL-4, or replace shutter (0201) (p. 66)		
No →	ℓ_{12} (White) : disconnection		G-10	G'-8
	IC_4 ⑮ : soldering failure		K-3	K'-3
	Two layers : contact failure			
	Flex PCB-A : defect	Replace flex PCB-A (0401)		
	Flex PCB-B : defect	Replace flex PCB-B (0402)		
	IC_1 ㉙ : soldering failure		L-3	L'-3
	IC_4 ㉚ : soldering failure		K-3	K'-3
	Flex PCB-A : defect	Replace flex PCB-A (0401)		

(2) Highest shutter speed is about 0.5–1 ms faster/slower shutter speed (with normal display)

Checking item	Causes	Servicing measures	Part position	
	Shutter : defect (SL-5 magnetic surface : stain)	Clean SL-5, or replace shutter (0201) (p. 66)		
	IC_4 : defect	Replace flex PCB-A (0401)		

(3) Unadjustable AE

Checking item	Causes	Servicing measures	Part position	
	VR_2 : soldering failure : short circuit		L-5	L'-5
	IC_2 ⑨ : soldering failure		L-5	L'-5
	A/D conversion reference voltage, 1152mV : adjusting failure	Re-adjust, following "Repair Guide" p. 22		
	Flex PCB-A : defect	Replace flex PCB-A (0401)		

(4) Aperture diameter not fully open regardless of full-open setting with normal display

Checking item	Causes	Servicing measures	Part position	
	Aperture control base plate set (0256) : defect	Check if backlash absorption spring off		
	Aperture ring : mis-installing	Re-assemble, following "Repair Guide" p. 9		

(5) Fast shutter speed at bulb setting
("blub" appears on shutter speed display)

Checking item	Causes	Servicing measures	Part position	
	ℓ_{38} (Green) : disconnection			
	ℓ_{37} (Orange) : disconnection			
	R_{44} : soldering failure	Check solder on Flex PCB-C (0451), or replace flex PCB-C		
	R_{45} : soldering failure	Check solder on Flex PCB-C (0451), or replace flex PCB-C		
	Q_{18} : soldering failure	Check solder on Flex PCB-C (0451), or replace flex PCB-C		
	Q_{19} : soldering failure	Check solder on Flex PCB-C (0451), or replace flex PCB-C		
	Flex PCB-C : defect	Check solder on Flex PCB-C (0451), or replace flex PCB-C		

(6) Fixed shutter speed at 1/100 sec with ϟ LED blinking in
all exposure modes ("1/100" display without flash)

Checking item	Causes	Servicing measures	Part position	
	IC_1 ㉜–㉝ : short circuit			
	IC_4 ㉟–㊱ : short circuit			
	Flex PCB-A : defect	Replace flex PCB-A (0401)		

3. Display failure only (normal winding and shutter releasing)

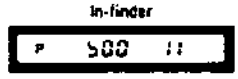
Sw. 0/1 ON (normal)

(1) All displays off in viewfinder LCD only

Checking item	Causes	Servicing measures	Part position	
	In-finder mirror (5813, 5814) A, B : off position	Adhere mirrors (5813, 5814)		
	In-finder set (0582) : defect			

Sw. 0/1 ON

or



(2) Some segments OFF in LCD

① The same semgents OFF (on-body and in-finder LCDs)

Checking item	Causes	Servicing measures	Part position	
	IC_3 pins : soldering failure		K-5	K'-5
	IC_3 pins : short circuit		K-5	K'-5
	Flex PCB-A : defect	Replace flex PCB-A (0401)		

② Some segments OFF on body LCD

Checking item	Causes	Servicing measures	Part position	
	Connector (4248) : twist ; stain			
	LCD_1 : defect	Replace LCD_1 (4245)		
	Flex PCB-A : defect	Replace flex PCB-A (0401)		

③ Some segments OFF in finder LCD

Checking item	Causes	Servicing measures	Part position	
	Joint of connector : defect	Follow p. 68)		
	LCD_2 : defect	Replace LCD_2 (4246)		
	Flex PCB-A : defect	Replace flex PCB-A (0401)		

(3) All displays blink or are unstable

① "ISO" display blinks for 10 sec by attaching battery holder set or turning P call key ON

"ISO 100" blinks for 10 sec.

Normal display by Sw. 0/1 ON for 10 sec.

Checking item	Causes	Servicing measures	Part position	
	Lithium batteries : exhausted			
	VDD2 on converter PCB : soldering failure	Re-solder converter PCB and flex PCB-B		
	$\mathcal{L}_{11}$ (Yellow) : soldering failure		G-2	G'-2
	Three layers : contact failure			
	D_{12} : soldering failure		O-2	
	IC_1 ⑬, ㊷, ㊾ : soldering failure		L-3	L'-3
	IC_4 ① : soldering failure		K-3	K'-3
	IC_5 pins : soldering failure ; short circuit		T-5	
	Flex PCB-A : defect	Replace flex PCB-A (0401)		
	Flex PCB-B : defect	Replace flex PCB-B (0402)		
	Flex PCB-D : defect	Replace flex PCB-D (0404		

② Mis-indication (flicker/unevenness)

Checking item	Causes	Servicing measures	Part position	
	XL_3 : soldering failure ; defect		K-4	K'-4
	C_{11}, C_{12} : soldering failure		K-4	K'-4
	IC_3 pins : soldering failure		K-5	K'-5
	Flex PCB-A : defect	Replace flex PCB-A (0401)		

③ All displays blink (BC lock operating)

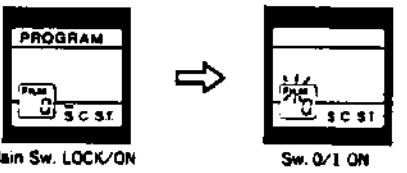
Checking item	Causes	Servicing measures	Part position	
	IC_6 : defect	Replace flex PCB-A (0401)	K-3	K'-3

(4) All displays ON (possibly ON dimly)

Checking item	Causes	Servicing measures	Part position	
	C_9 : short circuit		K-5	K'-5
	R_8 and BL contact holder set : short circuit		K-4	K'-4
	IC_2 ㊸, ㊹ : soldering failure		K-5	K'-5
	Flex PCB-A : defect	Replace flex PCB-A (0401)		

(5) All displays OFF

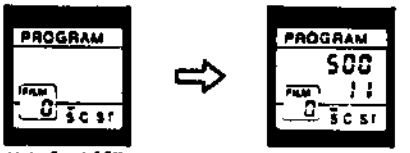
Checking item	Causes	Servicing measures	Part position	
	R_6 : soldering failure ; defect		K-4	K'-4
	IC_2 ㊱ : soldering failure		L-5	L'-5
	IC_3 ㊺, ㊻ : soldering failure		K-5	K'-5
	Flex PCB-A : defect	Replace flex PCB-A (0401)		



Main Sw. LOCK/ON → Sw. 0/1 ON

(6) "FILM" blinks by Sw. 0/1 ON

Checking item	Causes	Servicing measures	Part position	
	ℓ_{33} (Orange) : disconnection		B-4	B'-4
	Sw. REW_2 : remains ON (p. 75)	Re-form contact		



Main Sw. LOCK → Main Sw. ON

(7) Metered value remains ON by main Sw. ON

Checking item	Causes	Servicing measures	Part position	
	Sw. AEL : remains ON (p. 75)	Re-form contact		
	Sw. 0 : remains ON	Re-form contact		
	Sw. 1 : remains ON (p. 74)	Re-form contact		
	C_4 : soldering failure : defect		K-2	K'-3
	GND on release contact plate set (0423) : deformation			
	Flex PCB-A : defect	Replace flex PCB-A (0401)		

(8) Viewfinder LED indication failure (Other operations are all normal)

① One of "▷ ◯ ◁" LEDs not glow

Checking item	Causes	Servicing measures	Part position	
	ℓ_{39} (Purple) : disconnection		C-10	C'-10
	ℓ_{40} (White) : disconnection		C-10	C'-10
	ℓ_{41} (Blue) : disconnection		C-10	C'-10
	R_{13}, R_{14}, R_{15} : soldering failure		Q-6	
	IC_6 ㉙, ㉚, ㉛ : soldering failure		P-6	
	In-finder set (0582) : defect			
	Two layers : contact failure			
	Flex PCB-B : defect	Replace flex PCB-B (0402)		

② All LEDs ("▷◯◁") not glow

Checking item	Causes	Servicing measures	Part position	
	ℓ_{37} (Orange) : disconnection		C-8	C'-9

③ "▷ ⁚" LEDs glow simultaneously

Checking item	Causes	Servicing measures	Part position	
	In-finder set (0582) : short circuit			
	IC_8 ㉙–㉚ : short circuit		P-6	
	Flex PCB-B : defect	Replace flex PCB-B (0402)		

④ " ⁚ ◁" LEDs glow simultaneously

Checking item	Causes	Servicing measures	Part position	
	In-finder set : short circuit			

⑤ Flash ready LED ϟ does not blink although X-sync speed is set

Checking item	Causes	Servicing measures	Part position	
	ℓ_{38} (Red) : disconnection		C-9	C'-9
	ℓ_{38} (Green) : disconnection		C-9	C'-9
	In-finder set (0582) : defect			
	IC_3 ① : soldering failure		K-5	K'-5
	Flex PCB-A : defect	Replace flex PCB-A (0401)		

⑥ Viewfinder lighting LED does not glow

Checking item	Causes	Servicing measures	Part position	
	ℓ_{38} (Red) : disconnection		C-9	C'-9
	ℓ_{38} (Yellow) : disconnection		C-9	C'-9
	IC_4 ⑬ : soldering failure		K-3	K'-3
	In-finder set (0582) : defect			
	Flex PCB-A : defect	Replace flex PCB-A (0401)		

⑦ Flash-signal LED ϟ glows with viewfinder lighting LED ON

Checking item	Causes	Servicing measures	Part position	
	Between ℓ_{38} and ℓ_{38} : short circuit		C-9	C'-8,9

(9) Other display failure

① Self-timer indication ON when releasing

Checking item	Causes	Servicing measures	Part position	
	IC_4 : defect	Replace flex PCB-A (0401)	K-3	K'-3

② Irregular frame-number display during winding operation
(Display OFF at 10th frame, segments off at 20th frame, etc.)

Checking item	Causes	Servicing measures	Part position	
	IC_3: defect	Replace flex PCB-A (0401)	K-5	K'-5

③ Irregular frame-number appears on body LCD w/in 4 sec after main Sw. LOCK → ON

Checking item	Causes	Servicing measures	Part position	
	IC_3: defect	Replace flex PCB-A (0401)	K-5	K'-5

④ Self-timer indication ON by Sw. 0/1 ON

Checking item	Causes	Servicing measures	Part position	
	IC_4: defect	Replace flex PCB-A (0401)	K-3	K'-3

4. AF/manual focusing failure

Focus indication LED failure only……See "3. Display failure (8)" on p. 30

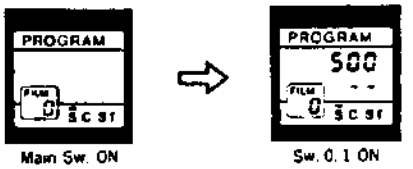
■ AF and manual focusing failure

(1) Always "▷ ◁" LEDs blink (Low contrast scanning in AF mode)

Low contrast scanning : Lens moves at a swoop to minimum distance or ∞ end

Checking item	Causes	Servicing measures	Part position	
	VCC2 on converter PCB (0450) : soldering failure	Replace converter PCB (0450)		
	IC_6, IC_7, IC_8 : defect	Replace flex PCB-B (0402)		
	AF sensor filter : stain	Clean. See fig. in (5)		
	Sub-mirror, mirror : stain	Clean. See fig. in (5)		

(2) No focusing with "– –" in apertrue display on body LCD (All LEDs "▷ ◯ ◁" do not glow, shutter is releasable by Sw. 2 ON regardless of out of focus in AF mode)



Main Sw. ON　　Sw. 0. 1 ON

Checking item	Causes	Servicing measures	Part position	
	BL contacts (L_1-L_3) : contact failure (stain)			
	BL contact board & flex PCB-A : soldering failure			
	R_{20}, R_{21}, R_{22} : soldering failure		L-6	L'-6
	BL contact holder set : defect (printed wire : disconnection)	Replace BL contact holder set (0150)		
	Flex PCB-A : defect	Replace flex PCB-A (0401)		
Lens : defect	Contacts on lens side : stain			
	PCB on lens side : defect (printed wire : disconnection)			

(3) No focusing or all LEDs ("▷◯◁") not glow

Checking item	Causes	Servicing measures	Part position	
	Three layers : contact failure			
	IC_1 : defect	Replace flex PCB-A (0401)	L-3	L'-3
	IC_4 : defect	Replace flex PCB-B (0402)	O-6	

(4) No focusing with "▷◯◁" glowing or blinking (When main Sw. 0/1 ON, AF motor possibly keeps running with all LEDs ON)

Checking item	Causes	Servicing measures	Part position	
	IC_4 : defect	Replace flex PCB-B (0402)	O-6	

(5) Regardless of out of focus on viewfinder, in-focus LED "○" glows

Checking item	Causes	Servicing measures	Part position	
Clean places shown by arrow.	AF sensor filter : stain, dust			
	VR_4 : adjusting failure	Re-adjust, following AF adjusting procedure	P-12	
	Flex PCB-B : defect	Replace flex PCB-B (0402)		

(6) "▷" LED glow regardless of low contrast subject*
(No "▷ ◁" LEDs blink)
※e.g. white paper

Checking item	Causes	Servicing measures	Part position	
	AF sensor filter : stain, dust			
	IC_8 : defect	Replace flex PCB-B (0402)	O-6	

(7) Shutter releaseable by Sw. 2 ON with "▷ ◁" blinking in AF mode

Checking item	Causes	Servicing measures	Part position	
	IC_1 : defect	Replace flex PCB-A (0401)	L-3	L'-3

■ AF operation failure (Normal operation in manual mode)

(1) Lens does not move in AF mode

Checking item	Causes	Servicing measures	Part position	
	Sw. 1 : contact failure (p. 74)			
	Sw. AF/M : remains ON (p. 76)			
	ℓ_{12} (Gray) : short circuit with GND		D-10	D'-11
	ℓ_{45} (Black) : off		C-7	C'-7
	ℓ_{23} (Brown) : disconnection			
	AF motor lead wire : disconnection	Check AF motor alone for functioning		
	AF motor : defect	Check AF motor alone for functioning		
	B_{31} : soldering failure : defect			H'-3
	IC_1 ㉗ : soldering failure		L-3	L'-3
	IC_4 : defect	Replace flex PCB-B (0402)	O-6	
	Flex PCB-A : defect	Replace flex PCB-A (0401)		

(2) Lens does not move from infinity to near side
(With 50mm/f : 1.7 lens)

Checking item	Causes	Servicing measures	Part position	
	Q_{12} : soldering failure ; defect (p. 79)		Q-3	
	Q_{13} : soldering failure ; defect (p. 79)		Q-3	
	IC_9 ①, ②, ⑬ : soldering failure		Q-2	
	IC_6 ⑬ : soldering failure		O-6	
	Flex PCB-B : defect	Replace flex PCB-B (0402)		

(3) Lens does not move from near to infinity side
(With 50mm/f : 1.7 lens)

Checking item	Causes	Servicing measures	Part position	
	Q_{11} : soldering failure ; defect (p. 79)		Q-3	
	Q_{14} : soldering failure ; defect (p. 79)		Q-3	
	IC_9 ③, ⑭, ⑮ : soldering failure		Q-2	
	IC_6 ⑭ : soldering failure		O-6	
	Flex PCB-B : defect	Replace flex PCB-B (0402)		

(4) Lens (AF motor) moves slightly whenever Sw. 1 ON

Checking item	Causes	Servicing measures	Part position	
	Flex PCB-B & -G ; soldering failure			
	PI-2 & flex PCB-G ; soldering failure (p. 78)			
	PI-2 : defect (p. 78)			
	C_{19} : soldering failure ; defect		J-3	J'-3
	C_{16} : soldering failure ; defect		J-2	J'-3
	IC_4 ④, ⑪, ⑫, ㉔, ㉕ : soldering failure		K-3	K'-3
	IC_4 ③-④, ④-⑤, ⑳-㉕ : short circuit		K-3	K'-3
	IC_6 ⑲, ⑳ : soldering failure		O-6	
	IC_6 ⑫-⑬, ⑬-⑱, ⑱-⑳ : short circuit		O-6	
	Flex PCB-A : defect	Replace flex PCB-A (0401)		
	Flex PCB-B : defect	Replace flex PCB-B (0402)		

(5) AF motor continues running at minimum distance or infinity end

Checking item	Causes	Servicing measures	Part position
If the trouble symptom does not reappear by changing over focus mode Sw., or by de-/attaching lens, the camera has no trouble	Converter PCB : defect	Replace converter PCB (0450)	
	Converter PCB & flex PCB-B : soldering failure	Re-solder (on converter PCB side, also)	
	IC_6 : defect	Replace flex PCB-B (0402)	

(6) Slow AF operation

Checking item	Causes	Servicing measures	Part position	
	IC_6 : defect	Replace flex PCB-B (0402)	O-6	

(7) Irregular sound with AF operation

Checking item	Causes	Servicing measures	Part position	
	Slit plate axis receiver on AF drive set (0260) : oil shortage	Apply oil, or replace AF drive set (0260)		
	AF drive set : defect	Replace AF drive set (0260)		

■ Manual focus operation failure

(1) AF motor runs idle by Sw. 1 ON in manual focus mode
(Normal operation in AF mode)

Checking item	Causes	Servicing measures	Part position	
	Sw. AF/M : contact failure (p. 76)			
	ℓ_{12} (Gray) : disconnection		D-10	D'-11
	IC_1 ⑮ : soldering failure		L-3	L'-3
	Connecting lever : catching ; operation failure	Replace connecting-lever (1520)		
	IC_4 : defect	Replace flex PCB-B (0402)	O-6	
	Flex PCB-A : defect	Replace flex PCB-A (0401)		

5. Initial loading/rewinding failure; operation failure about key switch changeover, piezo buzzer, self-timer

■ Initial loading failure only

(1) No initial loading by closing back cover
(normal releasing and winding operation)

Checking item	Causes	Servicing measures	Part position	
Does frame number increase w/o film? Yes →	Sw. SLS : contact failure			
	Sw. SLS pins & flex PCB-B : soldering failure			
	IC_1 ⑪ : soldering failure		L-3	L'-3
	Flex PCB-A : defect	Replace flex PCB-A (0401)		
	Flex PCB-B : defect	Replace flex PCB-B (0402)		
No →	Sw. RC : contact failure			
	IC_1 ⑯ : soldering failure		L-3	L'-3
	Three layers : contact failure			
	Flex PCB-A : defect	Replace flex PCB-A (0401)		
	Flex PCB-D : defect	Replace flex PCB-D (0404)		

(2) Only 1 or 2 releasings (usually 4 releasings for initial loading)

Checking item	Causes	Servicing measures	Part position	
	IC_1 : defect	Replace flex PCB-A (0401)	L-3	L'-3

(3) Frame counter advances to "1" without film

Checking item	Causes	Servicing measures	Part position	
	IC_5 : defect	Replace flex PCB-D (0404)	T-5	

(4) No initial loading; continuous releasing starts before frame number "1"

Checking item	Causes	Servicing measures	Part position	
	IC_1 ⑤–⑥ : short circuit		L-3	L'-3
	Flex PCB-A : defect	Replace flex PCB-A (0401)		

■ Rewinding failure

(1) No rewinding (no "FILM" blinks; stand-by display remains ON)

Checking item	Causes	Servicing measures	Part position	
	ℓ_{02} (Brown) : disconnection		A-3	A'-3
	ℓ_{03} (Orange) : disconnection		B-4	B'-4
	Sw. REW_1 : contact failure (p. 75)			
	Sw. REW_2 : contact failure (p. 75)			
	IC_1 ⑧, ⑮ : soldering failure		L-3	L'-3
	Sw. REW_1 contact : greased			
	Flex PCB-A : defect	Replace flex PCB-A (0401)		

Main Sw. LOCK/ON

(2) Rewinding stops halfway with "FILM" blinking
(including : motor stops w/in 8 sec after rewinding starts)

Checking item	Causes	Servicing measures	Part position	
At rewinding completion, open back cover and remove film cartridge carefully. Does rewinding-fork rotate smoothly? No →	Rewinding gears : catching • Rewinding gear-D_1, -D_2 (3309, 3319) : seizure • Rewinding gears : foreign substance • Rewinding changeover lever : defect			
Yes →	ℓ_{22} (Blue) : short circuit with GND		A-11	A'-13
	ℓ_{30} (Yellow) : disconnection		E-16	
	ℓ_{31} (Blue) : disconnection		E-16	
	ℓ_{32} (Black) : disconnection		E-16	
	Sw. REW_3 : contact failure			
	Sw. REW_3 : remains ON			
	Q_{15} : soldering failure ; defect (p. 79)		Rewinding base plate (0330)	
				K'-3
	Q_{17} : soldering failure ; defect (p. 79)			K'-3
	Flex PCB-C : defect	Replace flex PCB-C (0451)		
	Rewinding base plate : defect	Replace rewinding base plate (0330)		
	Film cartridge receiver (1072) : off position			

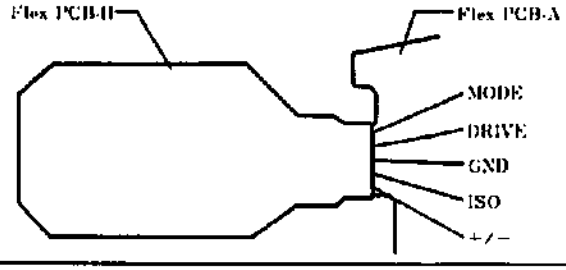
(3) Always rewinding ON

Checking item	Causes	Servicing measures	Part position	
	IC_1 : defect	Replace flex PCB-A (0401)	L-3	L'-3

■ Key switch changeover failure

(1) Key switch (+/−, ISO, DRIVE, MODE, UP, or DOWN) does not work.

Checking item	Causes	Servicing measures	Part position	
ISO key switch does not work	Flex PCB-A & -H : soldering			
	Sw. 31 printed wire : stain ; contact failure			
	IC_1 ⑯ : soldering failure		L-3	L'-3
	Flex PCB-A : defect	Replace flex PCB-A (0401)		
	Flex PCB-H : defect	Replace flex PCB-H (4228)		
+/− key switch does not work	Sw. 32 printed wire : stain ; contact failure			
	Flex PCB-A & -H : soldering failure			
	IC_1 ⑰ : soldering failure		L-3	L'-3
	Flex PCB-A : defect	Replace flex PCB-A (0401)		
	Flex PCB-H : defect	Replace flex PCB-H (4228)		
Drive mode key switch does not work	Sw. 33 printed wire : stain ; contact failure			
	Flex PCB-A & -H : soldering failure			
	IC_1 ⑱ : soldering failure		L-3	L'-3
	Flex PCB-A : defect	Replace flex PCB-A (0401)		
	Flex PCB-A : defect	Replace flex PCB-H (4228)		
Exposure mode key switch does not work	Sw. 34 printed wire : stain ; contact failure			
	Flex PCB-A & -H : soldering failure			
	IC_1 ⑲ : soldering failure		L-3	L'-3
	Flex PCB-A : defect	Replace flex PCB-A (0401)		
	Flex PCB-H : defect	Replace flex PCB-H (4228)		
F stop-up key switch does not work	Sw. 35 printed wire : stain ; contact failure			
	ℓ_{39} (Green) : disconnection		E-10	E'-10
	Aperture key click plate set (0420) screw : looseness			
	IC_1 ㉑ : soldering failure		L-3	L'-3
	Flex PCB-A : defect	Replace flex PCB-A (0401)		
F stop-down key switch does not work	Sw. 36 printed wire : stain ; contact failure			
	ℓ_{38} (Yellow) : disconnection		E-10	E'-10
	Aperture key click plate set (0420) screw : looseness			
	IC_1 ⑳ : soldering failure		L-3	L'-3
	Flex PCB-A : defect	Replace flex PCB-A (0401)		
Shutter speed up/down key switch does not work	Sw. 37 printed wire : stain ; contact failure			
	Sw. 38 printed wire : stain ; contact failure			
	Shutter-speed-key-clik-plate (4203) : soldering failure			
	IC_1 ㉒, ㉓ : soldering failure		L-3	L'-3
	Flex PCB-A : defect	Replace flex PCB-A (0401)		



(2) All of keys do not work

Checking item	Causes	Servicing measures	Part position	
	Flex PCB-A & -H (at GND) : soldering failure See figure of (1)			
	Key click plate (4205) screw : looseness			

(3) Data display does not follow the selection of key switch

Checking item	Causes	Servicing measures	Part position	
	IC_1 pins (⑲–㉑) : short circuit		L-3	L'-3
	Flex PCB-A : defect	Replace flex PCB-A (0401)		

■ Piezo buzzer failure

(1) No beeping

Checking item	Causes	Servicing measures	Part position	
	Sw. 0 : contact failure			
	Buzzer lead wires (Black/Red) : disconnection		A-13	A'-13
	R_{34} : soldering failure : defect		L-2	L'-2
	Piezo buzzer : defect			
	IC_1 ⑳ : soldering failure		L-3	L'-3
	Flex PCB-A : defect	Replace flex PCB-A (0401)		

(2) Beeping excessively loud

Checking item	Causes	Servicing measures	Part position	
	R_{34} : short circuit		L-2	L'-2
	Flex PCB-A : defect	Replace flex PCB-A (0401)		

(3) Low beeping

Checking item	Causes	Servicing measures	Part position	
	Adhesion of piezo buzer : insufficient			
	Piezo buzzer : defect			

(4) Beeping at main Sw. ON position

Checking item	Causes	Servicing measures	Part position	
	IC_1 : defect	Replace flex PCB-A (0401)	L-3	L'-3

■ Self-timer operation failure

(1) Self-timer works without self-timer LED blinking

Checking item	Causes	Servicing measures	Part position	
	LD_1 : soldering failure ;defect		R-12	
	IC_4 ⑭ : soldering failure		K-3	K'-3
	Flex PCB-A : defect	Replace flex PCB-A (0401)		
	Flex PCB-B : defect	Replace flex PCB-B (0402)		

(2) No self-timer LED blinks (In self-timer mode, 30msec is fixed as the fastest speed regardless of faster shutter speed setting)

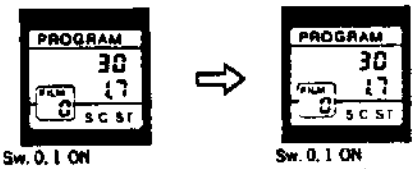
Checking item	Causes	Servicing measures	Part position	
	IC_1 ㊾ : soldering failure		L-3	L'-3
	IC_4 ㉚ : soldering failure		K-3	K'-3
	Flex PCB-A : defect	Replace flex PCB-A (0401)		

6. Operation failure using accessories

■ Operation failure using exclusive flash unit

(1) Data display failure with fully charged flash

① Shutter speed display on body LCD does not change to X-sync speed (100); no flash-ready-LED (ϟ) blinking



Sw. 0, 1 ON
Imcomplete charging

Sw. 0, 1 ON
Complete charging

Checking item	Causes	Servicing measures	Part position	
	F_2 terminal : contact failure			
	ℓ_{32} (White) : disconnection		A-9	A'-9
	ℓ_{19}, ℓ_{20} : reversed		G-7 D-6	G'-9 D'-6
	IC_4 ㉓ : soldering failure		K-3	K'-3
	Flex PCB-A : defect	Replace flex PCB-A (0401)		

② Flash-ready-LED " ϟ " does not blink although X-sync speed is set

Sw. 0, 1 ON
Imcomplete charging

Sw. 0, 1 ON
Complete charging

Checking item	Causes	Servicing measures	Part position	
	ℓ_{36} (Red) : disconnection		C-9	C'-9
	ℓ_{38} (Green) : disconnection		C-9	C'-8
	IC_3 ① : soldering failure		K-5	K'-5
	In-finder set (0582) : defect			
	Flex PCB-A : defect	Replace flex PCB-A (0401)		

③ Flash-ready-LED " ϟ " remains ON during releasing

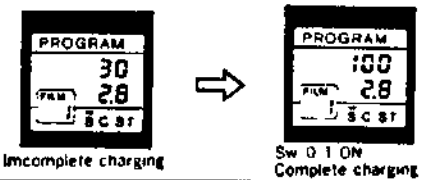
Checking item	Causes	Servicing measures	Part position	
	IC_3 ㊼ : soldering failure		K-5	K'-5
	Flex PCB-A : defect	Replace flex PCB-A (0401)		

④ X-sync speed does not change from 60 to 100 (100 to 60) although luminance is change in P mode

Checking item	Causes	Servicing measures	Part position	
	IC_1 : defect	Replace flex PCB-A (0401)	L-3	L'-3

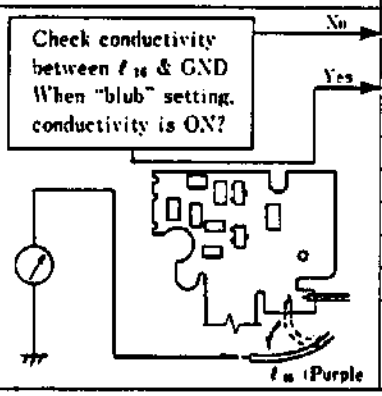
(2) Firing failure in flash mode with fully charged flash unit (X-sync speed is set)

① No firing



Imcomplete charging

Sw 0 1 ON
Complete charging

Checking item	Causes	Servicing measures	Part position	
	Sw. X2 : contact failure (p. 76)			
	Sw. X2 : contact failure (p. 76)			
	F1 terminal : contact failure			
	ℓ16 (Purple) : disconnection		G-9	G'-9
	ℓ17 (Black) : disconnection		G-9	G'-9
	ℓ18 (Purple) : disconnection		D-6	D'-6
	ℓ20 (Black) : disconnection		D-6	D'-6
	ℓ30 (Purple) : disconnection		A-7	A'-7
	ℓ31 (Black) : disconnection		A-7	A'-7

② Always flash fires fully

Checking item	Causes	Servicing measures	Part position	
	ℓ1 (Gray) : disconnection		D-11	D'-12
	SPC-2 : defect			
	IC3 ㉛ : soldering failure		L-3	L'-3
	IC3 ⑰, ⑱, ㉜–㊲ : soldering failure		L-5	L'-5
	IC4 ㉒, ㉜, ㊷–㊹, ㊽ : soldering failure		K-3	K'-3
	Flex PCB-A : defect	Replace flex PCB-A (0401)		

③ Always brief-firing

Checking item	Causes	Servicing measures	Part position	
	R3 : soldering failure ; defect		M-5	M'-5
	C8 : soldering failure ; defect		M-5	M'-5
	IC2 : defect		L-5	L'-5

④ Unstable firing (too much or too little)

Checking item	Causes	Servicing measures	Part position	
	VR3 : soldering failure ; short circuit		L-5	L'-5
	C8 : soldering failure ; short circuit		M-5	M'-5
	Flex PCB-A : defect	Replace flex PCB-A (0401)		

⑤ Always flash is controlled 1-1.5Ev under

Checking item	Causes	Servicing measures	Part position
	VR3 : adjusting failure		L-5 L'-5
	Sponge (2072-4511) : missing, deformation	Replace sponge (4511)	
	Flex PCB-A : defect	Replace flex PCB-A (0401)	

(3) Underexposure in flash-photography
(with X-sync speed display, normal firing)

Checking item	Causes	Servicing measures	Part position	
Does "– –" appear in aperture display? →	See "underexposure (3)" on p. 33			
↓	Power-level selector : remains LOW			

(4) AF illuminator does not fire in low light condition with Sw. 1 ON in AF mode

Checking item	Causes	Servicing measures	Part position	
	F_4 terminal : contact failure			
	ℓ_{36} (Blue) : disconnection		A-8	A'-8
	IC_6 ⑲ : soldering failure		O-6	
	IC_6 : defect	Replace flex PCB-B (0402)	O-6	
	Two layers : contact failure			
	Flex PCB-A : defect	Replace flex PCB-A (0401)		
	Flex PCB-B : defect	Replace flex PCB-B (0402)		

■ Operation failure using PROGRAM BACK

(1) No imprinting

Checking item	Causes	Servicing measures	Part position	
	Accessory back contacts : contact failure			
	R_{38} : disconnection		U-5	
	IC_1 ⑩ : soldering failure		L-3	L'-3
	Three layers : contact failure			
	Flex PCB-A : defect	Replace flex PCB-A (0401)		
	Flex PCB-D : defect	Replace flex PCB-D (0404)		

(2) Intervalometer operation failure

Checking item	Causes	Servicing measures	Part position	
	Accessory back contacts : contact failure			
	Three layers : contact failure			
	Flex PCB-A : defect	Replace flex PCB-A (0401)		
	Flex PCB-D : defect	Replace flex PCB-D (0404)		

(3) Shutter releasing failure
(No shutter releasing by Sw. 2 ON ; Shutter releasing or irregular shutter operation by Sw. 2 OFF)

Checking item	Causes	Servicing measures	Part position
	Program Back-side : defect	Replace PCB of Program Back, and clean battery contact	

(4) Data transmission failure using PROGRAM BACK SUPER 70

Checking item	Causes	Servicing measures	Part position
	Accessory back contacts : contact failure		
	Three layers : contact failure		
	Flex PCB-A : defect	Replace flex PCB-A (0401)	
	Flex PCB-D : defect	Replace flex PCB-D (0404)	

7. Operation failures about CAS code, AE lock, sharp battery draining, light leakage, uneven space between frames

■ Mis-decoding of CAS code

(1) Incorrect film speed (ISO) setting
(One roll of film is all under/over-exposed)

Checking item	Causes	Servicing measures	Part position	
	CAS contacts : contact failure	Clean contacts, or replace flex PCB-D (0404)		
	DX-coded film : defect			
	IC_5 pins : soldering failure ; short circuit		T-5	
	Flex PCB-D : defect	Replace flex PCB-D (0404)		

(2) "ISO 5000" appears in body LCD (is memorized)

Checking item	Causes	Servicing measures	Part position	
	Flex PCB-B and -D : soldering failure			
	Flex PCB-BL and flex PCB-A : soldering failure			

■ AE lock failure

(1) Unlocked

Checking item	Causes	Servicing measures	Part position	
	Sw. AEL : contact failure (p. 75)			
	Sw. AEL and flex PCB-A : soldering failure (p. 75)			
	IC_1 ㊾ : soldering failure		L-3	L'-3
	Flex PCB-A : defect	Replace flex PCB-A (0401)		

(2) AE remains locked

Checking item	Causes	Servicing measures	Part position	
	Sw. AEL : remains ON (p. 57)	Re-form contact		
	IC_1 : defect	Replace flex PCB-A (0401)		

(3) Shutter releases by AE lock Sw. ON

Checking item	Causes	Servicing measures	Part position	
	IC_1 ㊾-㊿ : short circuit		L-3	L'-3
	Flex PCB-A : defect	Replace flex PCB-A (0401)		

(4) Winding motor runs idle for 1.2 sec by AE lock Sw. ON

Checking item	Causes	Servicing measures	Part position	
	IC_1 ㊾-㊽ : short circuit		L-3	L'-3
	Flex PCB-A : defect	Replace flex PCB-A (0401)		

■ Battery drains sharply (p. 71)

(1) Motor driving transistor heating, partly deforming front-side-cover-A (1015)

① One of transistors for AF motor is heated (See p. 70 for repair)

Checking item	Causes	Servicing measures	Part position	
	ℓ_{61} (Red) : disconnection		G-5	
	ℓ_{62} (Black) : disconnection		G-3	
	D_{13} : soldering failure			
	IC_9 : defect	Replace IC_9, or replace flex PCB-B (0402)		
	Flex PCB-B : defect	Replace flex PCB-B (0402)		

② One of transistors for winding motor is heated (See p. 70 for repair)

Checking item	Causes	Servicing measures	Part position	
	Converter PCB : defect	Replace converter PCB (0450)		
	Flex PCB-B & converter PCB pins : soldering failure			
	ℓ_6 (Red) : short circuit on flex PCB-B		E-2	E'-2
	ℓ_7 (Black) : short circuit on flex PCB-B		E-2	E'-2

(2) Great current consumption when winding/rewinding

Checking item	Causes	Servicing measures	Part position	
	Winding base plate set : oil shortage	Replace winding base plate set (0304)		
	Winding motor axis : stiffness	See p. 63		
	Film cartridge receiver (1072) : off position			
	Sprocket axis set (0352) : defect			

(3) Current leakage and short circuit

① Current leakage (100-300μA) with main Sw. LOCK (normally 25-70μA)

Checking item	Causes	Servicing measures	Part position	
Does current leakage increase/decrease by separating two layers? Yes →	ℓ_{33}, ℓ_{37} : short circuit		C-9, 8	C'-9
	C_9 : short circuit		K-5	K'-5
	C_8 : reversed position		M-2	M'-2
No →	Flex PCB-A : defect	Replace flex PCB-A (0401)		
	D_{13} : defect		O-2	
	Converter PCB : defect	Replace converter PCB (0450)		
	Flex PCB-B : defect	Replace flex PCB-B (0402)		
Unstable current leakage between 100-200μA	XL_2 : defect		K-4	K'-4
Current leakage becomes normal by IC_2 ㉜ pin off	IC_2 : defect	Replace flex PCB-A (0401)	L-5	L'-5
Current leakage becomes normal by IC_3 ㊾, ㊾, ㊻ pin off	IC_3 : defect	Replace flex PCB-A (0401)	K-5	K'-5

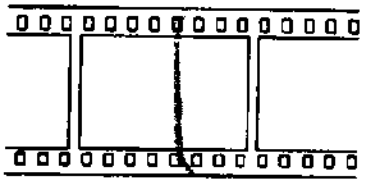
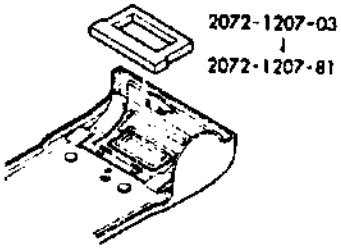
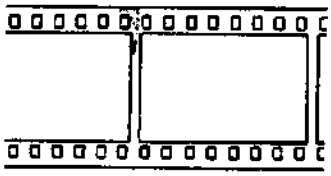
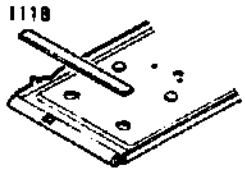
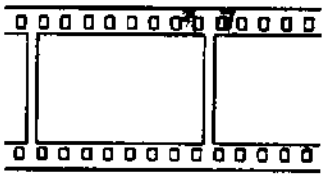
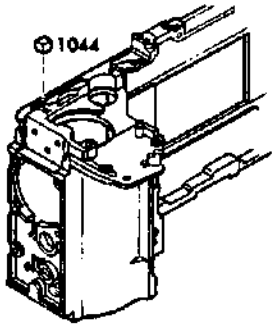
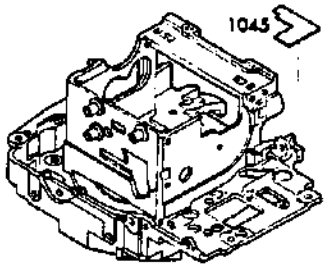
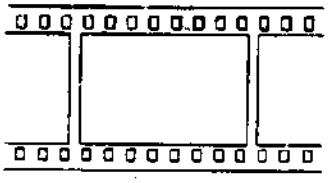
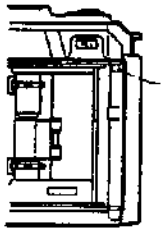
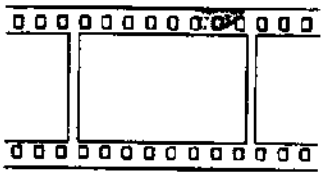
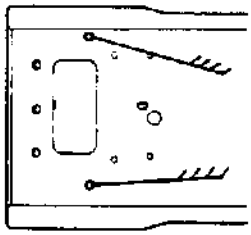
② Current leakage (200μA to 1mA) with main Sw. ON/LOCK

Checking item	Causes	Servicing measures	Part position	
Does current leakage decrease by separating three layers, or by unsoldering flex PCB-B & -D sets? Yes →	IC_8 ⑬–⑭ : short circuit		T-5	
	IC_3 : defect	Replace flex PCB-D (0404)	T-5	
No →	Converter PCB : defect	Replace converter PCB (0450)	O-6	
	IC_6 : defect	Replace flex PCB-B (0402)		

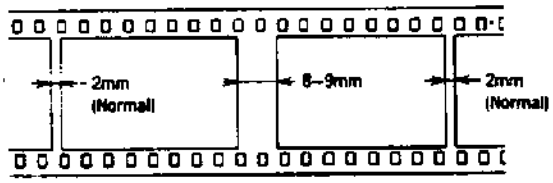
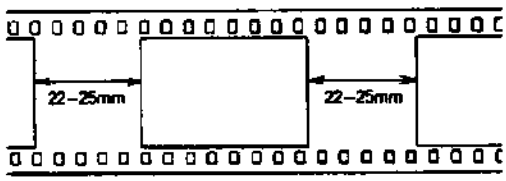
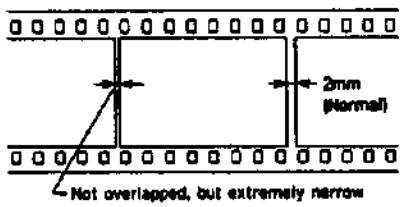
③ Short circuit/10mA or more current leakage

Checking item	Causes	Servicing measures	Part position	
About 10 to 30mA	D_{32} : defect		O-2	
	Q_8 : defect (p. 79)		O-2	
	Converter PCB : defect	Replace converter PCB (0450)		
	Flex PCB-B : defect	Replace flex PCB-B (0402)		
About 30 to 60mA	Sw. 30 : short circuit			
	D_{14} : defect		O-2	
	Flex PCB-B : defect			
About 60mA	IC_4 : defect	Replace flex PCB-A (0401)	K-3	
500mA or more	Converter PCB : defect	Replace converter PCB (0450)		
	ℓ_{18} : short circuit with GND		G-9	G'-9
	Aperture control base plate (0256) : temporary screw remains			
	D_3 : defect		Q-3	
	Flex PCB-A : defect	Replace flex PCB-A (0401)		
	Flex PCB-B : defect	Replace flex PCB-B (0402)		

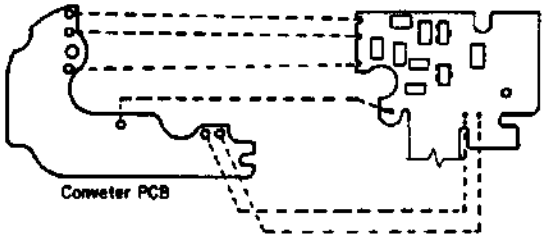
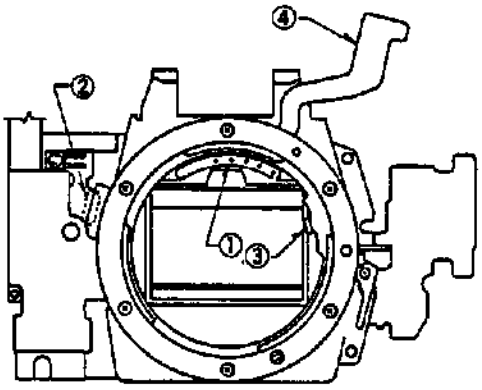
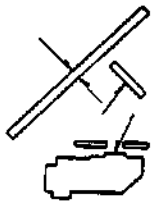
■Light leakage

Trouble symptoms	Servicing measures
1. Light leaks through film cartridge window. 	• Change light-shield-sponge 2072-1207-03 to -81. 
2. Light leaks through top of hinge-cover. 	• Replace light shield sponge-A (2072-1118) with new one. 
3. Light leaks through self-timer LED side/ through hole under AE lock Sw. 	• Re-attach 2072-1044-81 or -1045-02 correctly.  Light leaks from here (under AE lock Sw.).  Light leaks from here (self-timer LED side).
4. Light leaks at the point where film wound by spool. 	
5. Light leaks at the point where film is out from film cartridge. 	• Check that tape is adhered to unused hole (for film pressure spring)—initial mass production only. • OR, replace back cover by servicing part. 

■Uneven spaces between frames

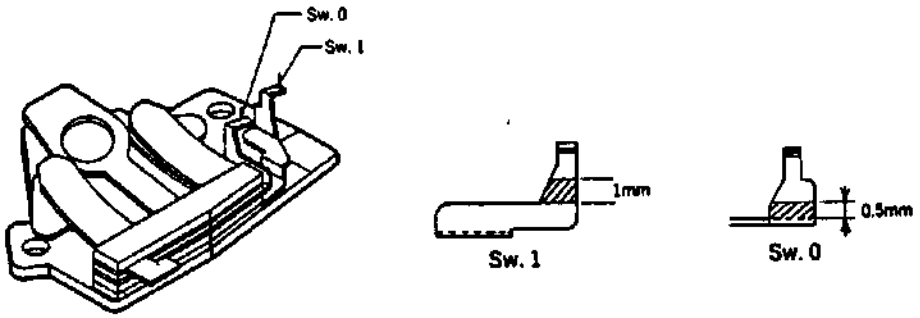
Trouble symptoms	Servicing measures
	• Replace winding base plate set (0304). • Or, replace sprocket axis set (0352) with new one. See p. 64 for combination of parts.
	• Replace winding base plate set (0304). • Or, replace winding base plate (upper) set (0303) with new one. See p. 64 for combination of parts. • Avoid excessive tightening of screw (9761-1780-01) to hold winding base plate. • Check that screw (9761-1740-01) for motor contact plate set (0311) is not loosened.
	• Check Sw. 4 contact pressure. (Clean the contact and strengthen contact pressure.) • Check that screw (9612-1625-01, for connecting winding-base-plate-set and mirror box) is not loosened nor off. • Replace winding base plate (lower) set (0301). See p. 64 for combination of parts.

■ The repair for items not reappear

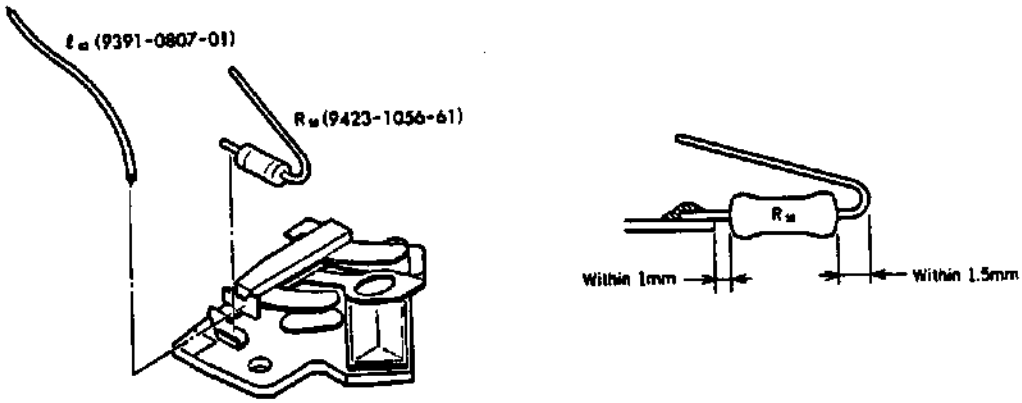
Trouble symptoms	Servicing measures
Shutter releasing/winding failure	• Remove top, bottom, & front covers, then check soldering of lead wire/electric elements visually. • Check winding base plate for functioning (foreign substance between gears ?) • Check converter PCB for soldering.  • Check Sw. 2, 4, 40, 400, 30, REW$_1$ for short circuit/contact failure. • Add motor support collar (see p. 63). • Install R_{38}, R_{31} on release contact plate (to prevent irregular operation due to static electricity).···See p. 62 for installing.
Exposure failure  	• Check shutter operation···irregular shutter speed ? (p. 66) • Check and clean BL contacts ····· ① • Check soldering between flex PCB-A and BL contact board ····· ④ • Check soldering between flex PCB-F and -B ····· ② • Check if aperture ring claw is not deformed ····· ③ • SL-3 lead wire : soldering off ····· ②
AF operation failure	• Check BL contact connecting condition. • Check Sw. AF/M contact pressure. • Check ℓ_{12} disconnection, catching.
 ←Remove foreign substance, dust.	• Check AF sensor filter for stain, dust. • Check sub-mirror, mirror for stain.
For other items, check relevant symptoms, following Service Manual.	

● Installing method of R_{S0} / R_{S1}

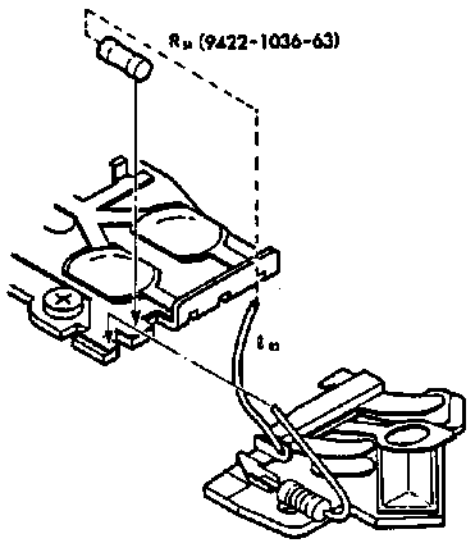
1. Remove release contact plate from camera, cut Sw. 0/1 contacts within marked (////) area.



2. Solder R_{S0} on Sw. 0 side, ℓ_{S3} (Brown, 20mm) on Sw. 1 side.



3. After soldering R_{S1} on flex PCB-A, solder ℓ_{S3} on R_{S1} reverse end.
Solder leg of R_{S0} on flex PCB-A. (See below fig.)



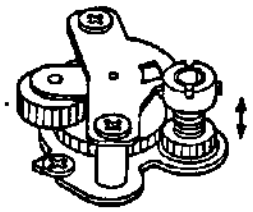
■ Servicing measures against rotation failure of winding motor, precaution when installing winding motor.

1. Check motor's looseness

1) Remove bottom cover. Push and hold motor set to the bottom cover side.

2) Pick up motor-gear-set with tweezers, and check the motor axis for looseness. Motor should have approx 0.2mm clearance.

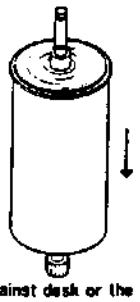
■Fig. 1



3) If having no/little looseness, the motor is defective ; so, take the following method.

- With motor PC board side up, strongly push motor set against desk etc. (in the direction of arrow····· fig. 2) so that the metal guide will be in position giving sound.
- After placing the guide in position, make sure that rotation of motor axis has become easier than before.
- If the guide does not move back in position, or if motor rotation is still unsmooth, replace motor set.

■Fig. 2



Push against desk or the like.

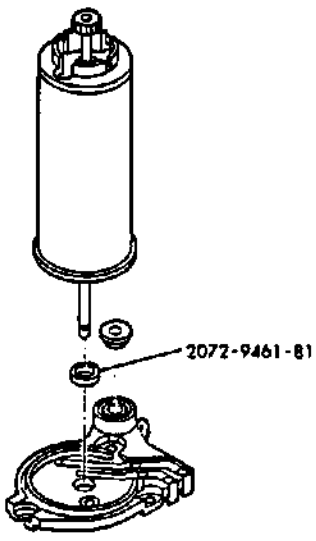
2. When installing motor

When installing motor set into the camera body, place motor-support-collar (2072-9461-81·····fig. 3) over the guide*.

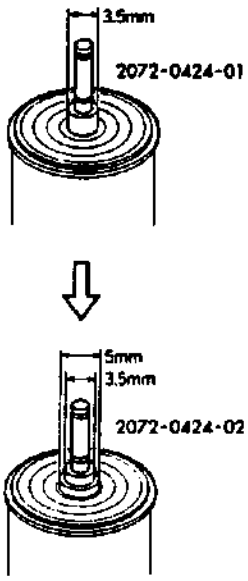
※Motor-support-collar is unnecessary for new-type motor set (2072-0424-02·····fig. 4).

When using new-type motor set, replace motor-contact-plate-set (2072-0311-01·····fig. 5) with new one (2072-0311-02).

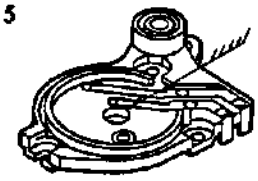
■Fig. 3



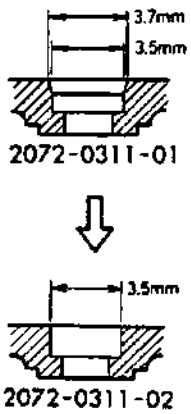
■Fig. 4



■Fig. 5



Sectional drawing



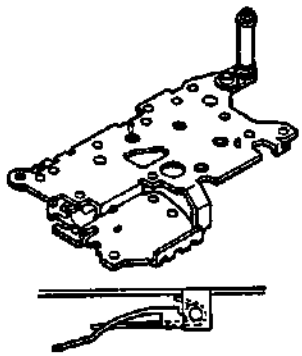
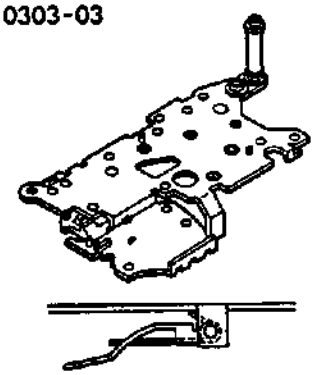
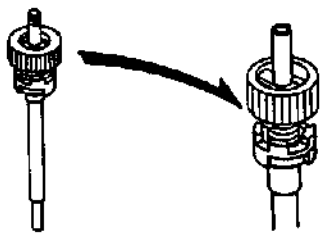
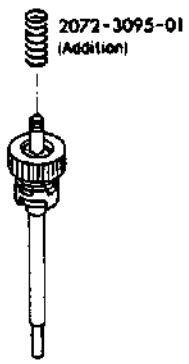
■ Precaution when replacing winding-base-plate-set.

- When replacing one of Type A parts (winding base plate, sprocket axis, etc.) with Type B, replace other relative parts (Type A) with Type B, also. (Winding-base-plate-set 2072-0304-01 includes all Type B parts*.)

  ※After installing 2072-0304-01 on body, REMOVE temporary-screw (holding 0352 in position). See next page. For installing 2072-0304-01, winding-base-plate-collar (2072-3082) is needed. (Be careful that there is no positioning-boss on previous type body.)

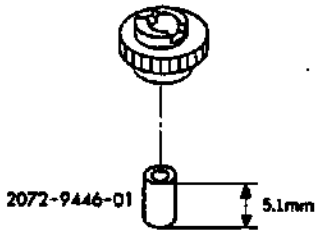
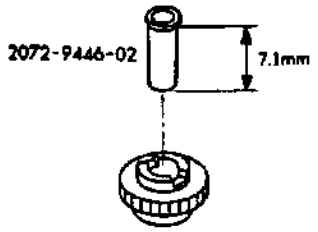
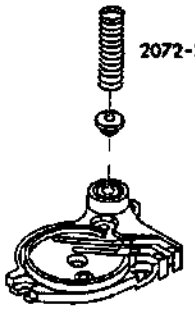
- When replacing only Type A sprocket-axis-set (2072-0352) with Type B, use the following four Type-B parts : 2072-0352-02, 2072-3009-05, 2072-3095-01, 2072-9446-02.
  There is no need to replace winding-base-plate-set (2072-0303) with Type B.

Table-1

Type A	Type B
2072-0303-01 	2072-0303-02 2072-0303-03 
2072-0352-01 	2072-0352-02
2072-3009-03	2072-3009-05
Not used	

To be continued on next page

Table-1 (continued)

Type A	Type B
	
	Not used (Usable)

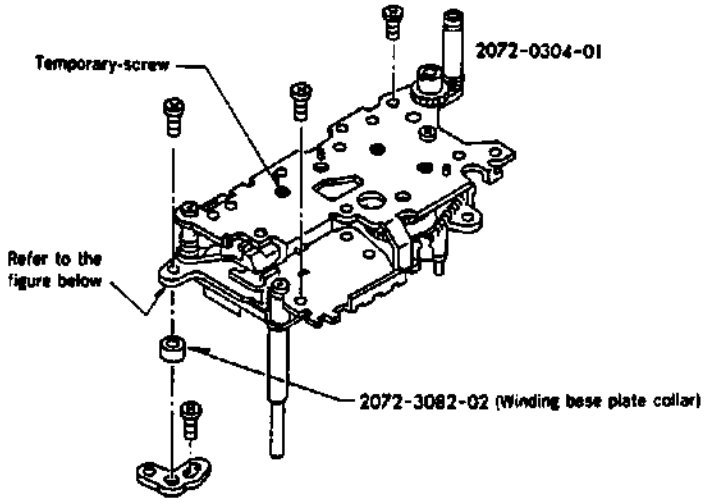
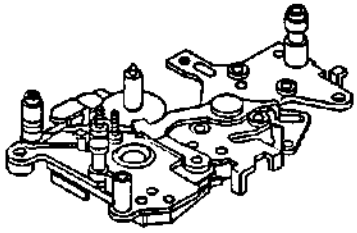
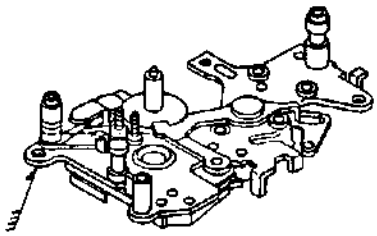


Table-2

Type A	Type B
2072-0301-02 	2072-0301-03 2072-0304-01 

■ Checking of unstable shutter speed and installing shutter set.

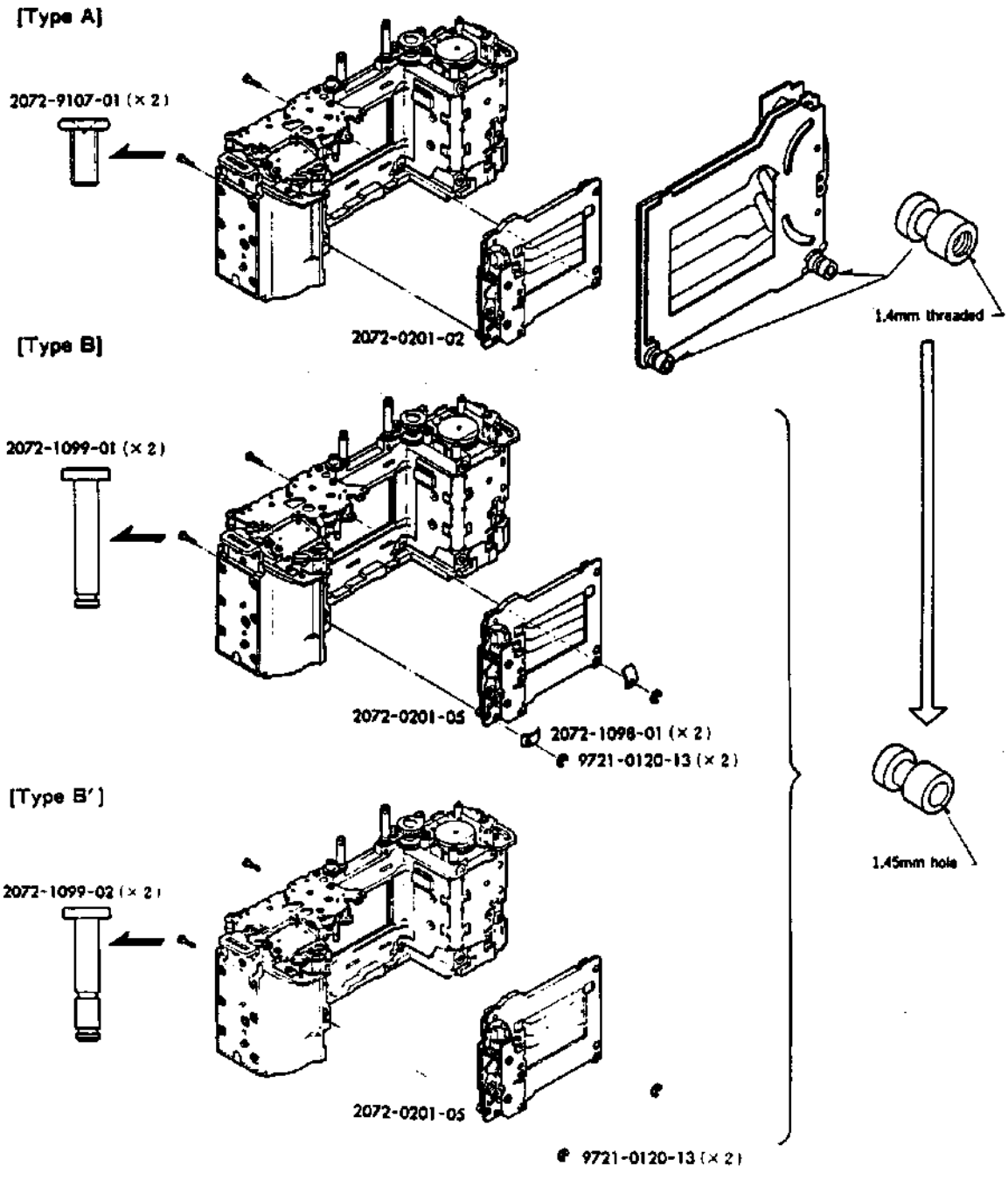
1. Checking of unstable shutter speed

Check if the problem is caused by deformed or defective shutter set (such as magnetic failure of SL-4, SL-5) as follows :

1) Measure actual shutter speed at 1/1000, 1/2000 setting.
2) Loosen screw (2072-9107-01, ×2) and re-tighten loosely.
3) Re-measure actual shutter speed at 1/1000, 1/2000 setting.

- If shutter speed is corrected, unstable shutter speed is caused by deformation of shutter set. So, replace shutter set by 2072-0201-05. Install it as type B/B' procedure.···See below figures.
- If shutter speed is not corrected, shutter set is defective, so replace shutter set by 2072-0201-02 or -05.

2. Installing procedure of shutter set

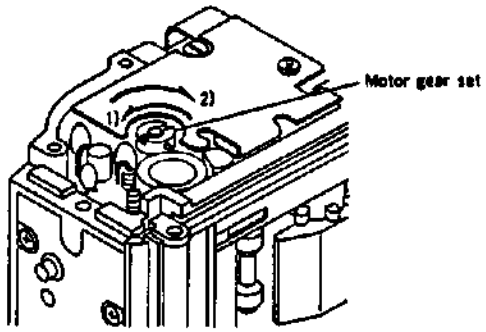


3. Checking of shutter charge amount

When shutter charge amount is insufficient, occasional continuous releasing occurs, or shutter charging is impossible with winding. After replacing shutter, check the shutter charge amount is as follows:

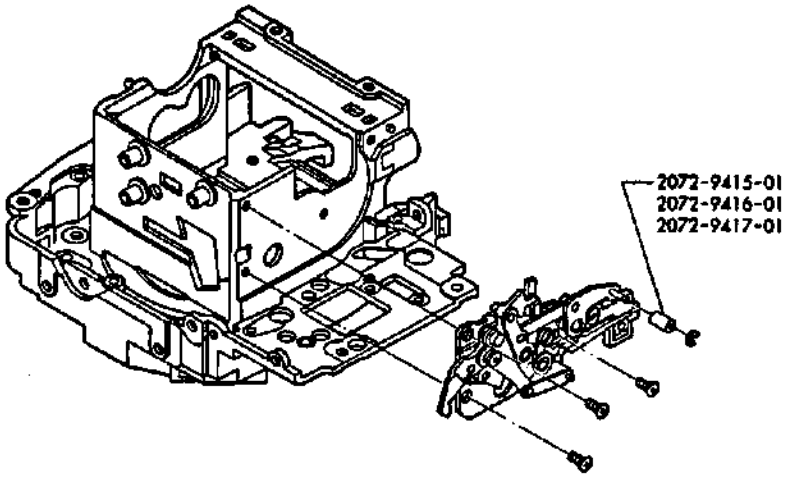
1) Rotate motor gear set counterclockwise to travel shutter.

2) Re-turn motor gear set clockwise to lower mirror completely.



3) Rotate spool slowly by hand to charge shutter.

4) After completion of shutter charging, check that shutter blades slightly return in the opposite direction of charging. If shutter blades do not return at all, or little return (resulting in the under-charge), replace collar (see below fig.) by next bigger size. (Complete under-charge : shutter blades return all the way.)



Part No.	Part name	External diameter (mm)
2072-9415-01	Collar-A	2.6
2072-9416-01	Collar-B	3
2072-9417-01	Collar-C	2.2

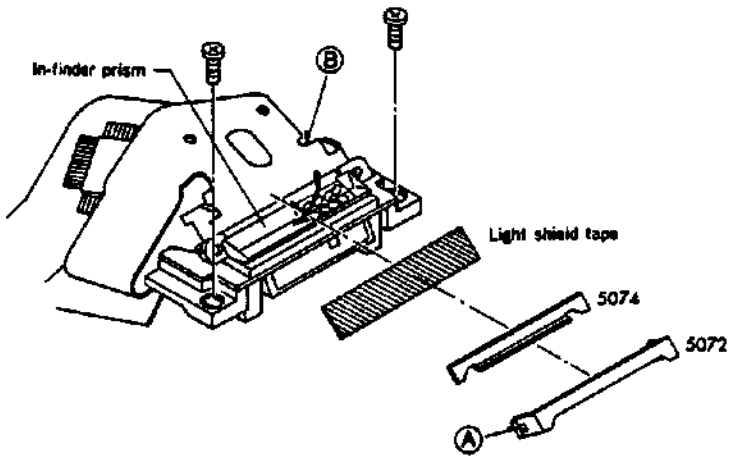
■Servicing measures against "in-finder segments OFF"

1. Unjoin flex PCB-A and LCD_2.

1) Unhook Ⓐ (right and left) of in-finder pressure plate-B (2072-5072). Remove in-finder pressure plate-A (2072-5074). Light shield tape is unnecessary any more.

2) Strip off flex PCB-A in the direction of arrow, holding around Ⓑ of flex PCB-A. (Be careful not to scratch printed wire of flex PCB-A.)

■Fig. 1

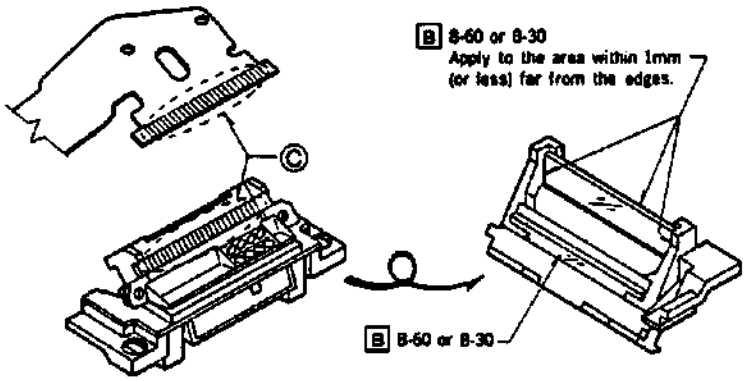


3) Wipe off coating Ⓒ between LCD_2 and flex PCB-A with using Fronsolve. (See fig. 2.)

- Be careful not to scratch printed wire of flex PCB-A.
- Wipe off coating thoroughfully.
- Be careful not to flow Fronsolve in between LCD_2 (2072-4246-01) and in-finder prism (2072-5815-02).

4) Turn in-finder set upside down, and reinforce mirror with B-60 (Bond G-17) or B-30 (Araldite).

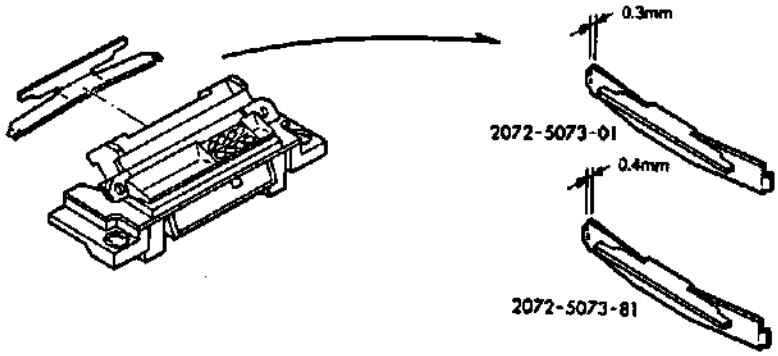
■Fig. 2



2. Re-join of flex PCB-A and LCD_2

1) Replace in-finder pressure-C 2072-5073-01 by -81. (See fig. 3.)

■Fig. 3

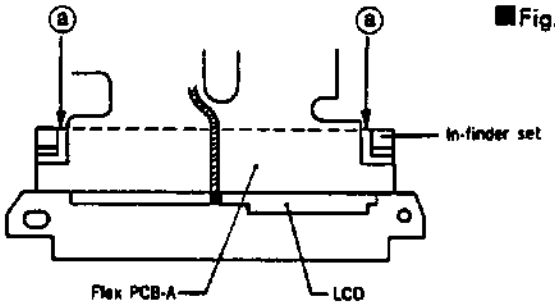


2) Attach in-finder unit to body and tighten screws temporarily.

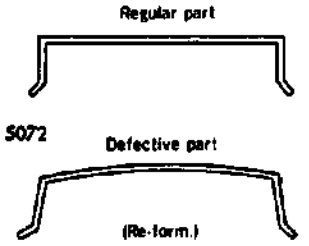
3) Align printed wire of LCD and flex PCB-A. (See fig. 4.)
Make sure that there is clearance ⓐ between in-finder set and flex PCB-A.

4) Holding flex PCB-A on LCD_2, cover pressure rubber (2072-5082-81), and place in-finder pressure -A (2072-5074), -B (2072-5072). Holding the center of 5072 by finger, align printed wire of LCD and flex PCB-A. Refer to 3).
※Make sure that 5072 has right angle (90°) or is not be deformed. (See fig. 5.)

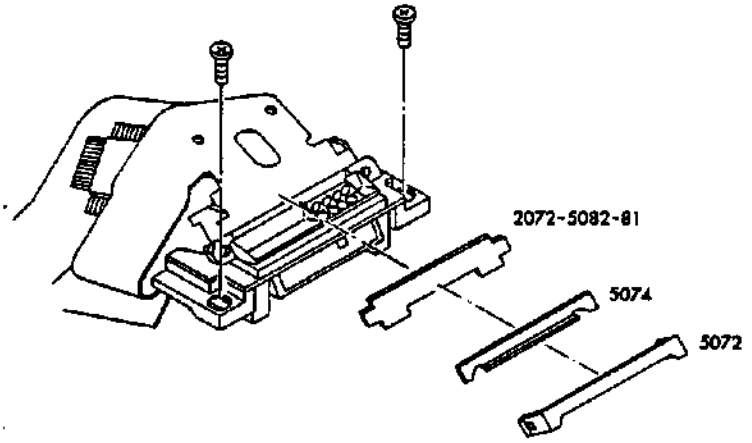
■Fig. 4



■Fig. 5



■Fig. 6

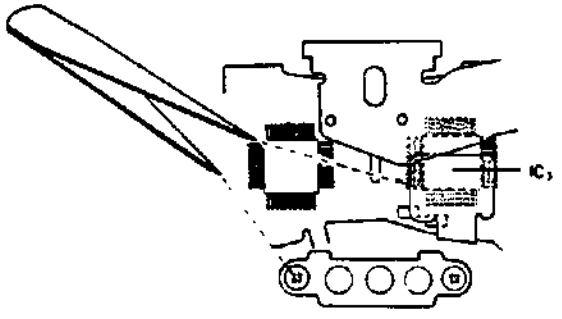


5) Fit 5072 to in-finder pressure-C.
Fit the hole of the 5072 one by one with tweezers, holding the center of 5072 by finger.

3. Check that LCDs are ON

After installing in-finder set to body, connect IC_3 ㊺ and GND with tweezers to make sure that all LCDs are ON, and position it correctly.

■Fig. 7

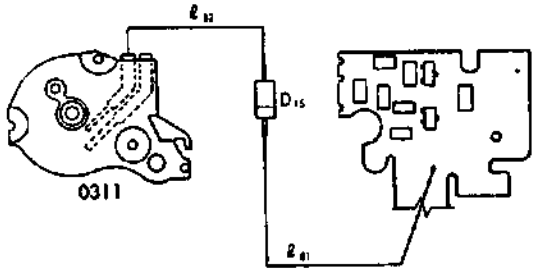
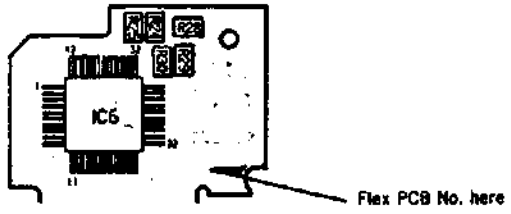


If some segments OFF

- Off position of flex PCB-A ·····Re-position.
- Breakage of LCD_2 ·····Replace LCD_2 (2072-4246-01)
- Disconnection of flex PCB-A ·····Replace flex PCB-A (2072-0401)

■ Servicing measures against transistor (for driving motor) heating

1. AF transistor (Q_{11}, Q_{12}, Q_{13}, Q_{14}) heating

① Body with D_{15}  	**Servicing measures** • Check for soldering on D_{15}, ℓ_{61}, ℓ_{62}. • Replace defective transistor and Q_{12} with new ones, and add diode as fig. 1.
② Body of which flex PCB-B is No. 4222-01  Flex PCB-B (0402)	**Servicing measures** • Check for soldering on IC_6 pin ⑪ and ℓ_{56} as below. • Replace defective transistor and Q_{12} with new ones, and add diode as fig. 1.
③ Body of which flex PCB-B is No. 4222-02 or when above soldering check points are all right.	**Servicing measures** • Replace IC_9, defective fransistor and Q_{12} with new ones, and add diode as fig. 1.

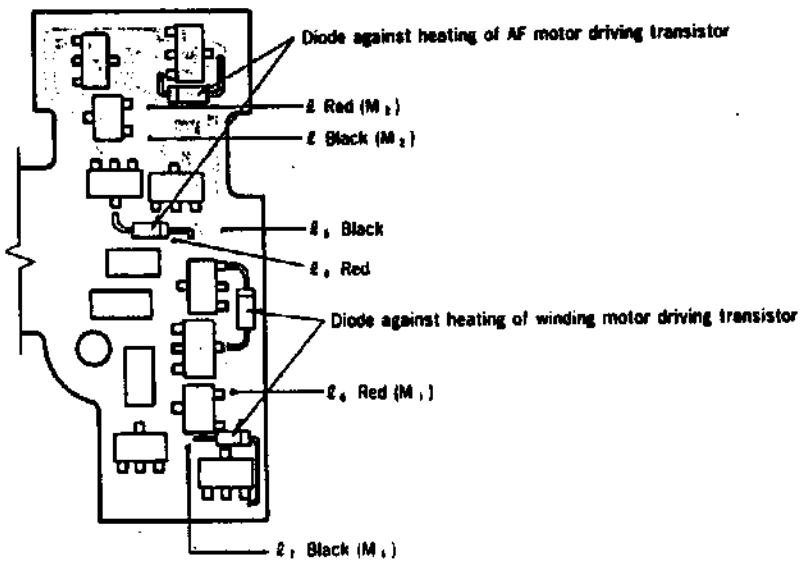
2. Winding transistor (Q_1, Q_2, Q_3, Q_4) heating

Servicing measures

Re-solder electric elements on converter PC board and re-solder between converter PC board and flex PCB-B.

Then, replace defective transistor and Q_{12} with new ones, and add diode (9361-1631-11) as fig. 1.

■ Fig. 1 Addition of diode


Diode against heating of AF motor driving transistor
ℓ Red (M_2)
ℓ Black (M_2)
ℓ_3 Black
ℓ_4 Red
Diode against heating of winding motor driving transistor
ℓ_4 Red (M_1)
ℓ_1 Black (M_1)

■Checking for "battery drains sharply"

1. When users point out that battery drains sharply although the camera is normal, check the following items.

Checking item	Notes
Insufficient battery capacity (depending on manufacturer, lot etc.)	Residual capacity : none
High internal resistance of battery	New battery may not be usable at all.
When AAA-size sealed carbon-zinc batteries are used.	Battery performance is extremely low.
In cold weather condition.	Residual capacity : A lot (in normal temperature)
Continuously current flowing (1) When main switch is LOCK with the following condition : ① P call key is held down. ② Improper attaching of battery holder. (2) When main switch is ON with the following condition : ① Operating button is held down. ② Control keys are held down. ③ AEL button is held down.	Battery exhausts in 8 hours.
Irregular operation of microcomputer. ① Because of static electricity flowing into camera. ② Because of chattering at battery contact.	Battery exhausts in 0.5-8 hours.

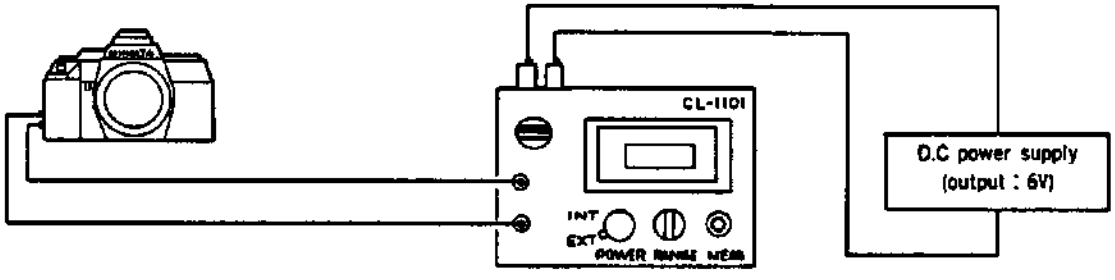
2. Checking procedure of camera side

2-1. Current leakage checking

■Standard

At main Sw. LOCK		100μA or less
At main Sw. ON/ ●))		200μA or less
At main Sw. ON/ ●))	and touch Sw. ON	150mA or less

■Measuring procedure……using camera-leak-checker (model CL-1101)



1) When main Sw. is at LOCK.
   ① Turn camera's main Sw. to LOCK, set camera-leak-checker's RANGE to "mA".
   ② Attach power-supply-adapter to camera. Stand-by display should appear on camera's LCD.
   NOTE : If camera-leak-checker's RANGE is set to "μA", all LCDs are OFF on body and "1." appears on checker's LCD.
   ③ Change over the checker's RANGE to "μA" and read the metered value. The value should be 100μA or less.

2) When main Sw. is ON.
   ① Set the checker's RANGE to "mA", and turn camera's main Sw. LOCK→ON, for stand-by display appearing.
   NOTE : If camera-leak-checker's RANGE is set to "μA", all LCDs are OFF on body and "1." appears on checker's LCD.
   ② Change over the checker's RANGE to "μA" and read the metered value. The value should be 200μA or less.

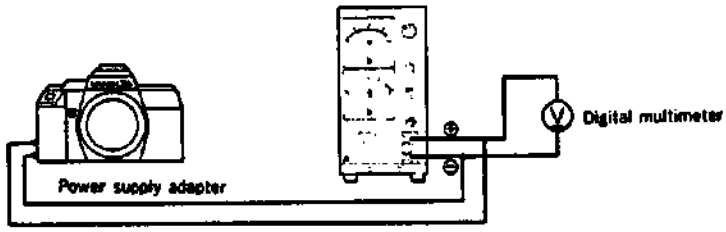
3) When main Sw. ON and touch Sw. ON.
   ① Set the checker's RANGE to "mA", and turn touch Sw. ON for metered value appearing.
   ② Read the metered value. The value should be 150mA or less.

2-2. B.C. lock voltage checking.

Measure the battery check level of 2072 as follows :

■Measuring instruments : DC power supply (524B, or equivalent which outputs 2-6V/2A or more)
: Digital multimeter
: Power supply adapter (2072-1221-75)

■Checking procedure



1) Connect both sides of resistor (1.5Ω/5W, on power supply adapter), using thick cord.
(Unless both sides of resistor are connected each other, measurement cannot be performed correctly because of voltage drop.)
2) Set the camera as fig. above.
3) Set the output voltage of DC power supply at 5V/2A.
4) Check that metered value appears in data display, by main Sw. and touch Sw. ON.
5) Lower the output voltage of DC power supply gradually, holding touch Sw. ON.
(Checking is possible only while metered value appears.)
6) Check that the voltage should meet the standard at the time when all LCDs starts to blink.
Once all LCDs starts to blink, blinking does not stop, even if the output voltage is heightened.
When rechecking, perform the following ① or ②, and repeat checking procedure 5) and 6).
① Slide main Sw. ON → OFF → ON.
② Lift your finger from touch Sw. Wait for 10 sec until the display disappears.

■Standard $2.22^{+0.10}_{-0.02}$V

- Shutter should be releasable, at the time when all LCDs starts to blink.
- It is unnecessary to check release lock voltage when B.C. voltage is cheked.
- If the voltage does not meet the standard, select ranking resistor for R_{11}*, or replace flex PCB-A set (2072-0401) with new one.

※R_{11}

Part No.	
9422-2746-63	270KΩ
9422-3346-63	330KΩ
9422-4746-63	470KΩ
9422-6846-63	680KΩ

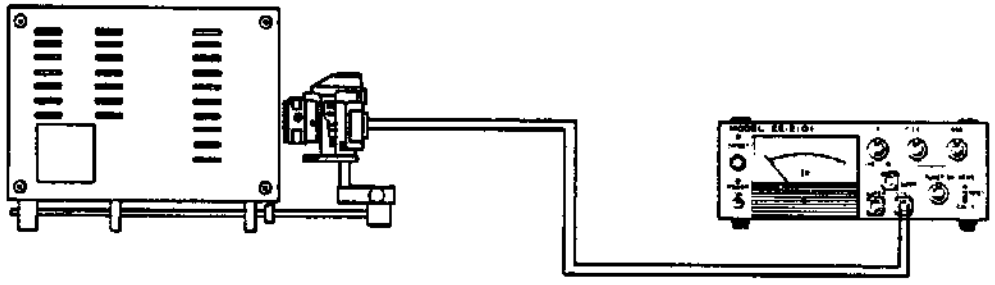
■ Aperture control checking procedure

■ Measuring instruments : Luminance source (Model L-2101, L-222, L-223)
: EE tester (Model EE-2101, EE-2111)
: Master lens (2072-0001-75)

■ Measuring procedure

1) Set measuring instruments and body as fig. below.

- Luminance source
  K value : 1.3
  Luminance : Ev 11
- EE tester
  Function : 35
  ASA : F
  K-value : 1.3
  MEAS-CALF : CALF
  F : 5.6
- Master lens
  Distance scale : ∞ (infinity)
- Body
  Exposure mode : M
  Shutter speed : bulb
  Aperture : f/5.6
  Focus mode : M

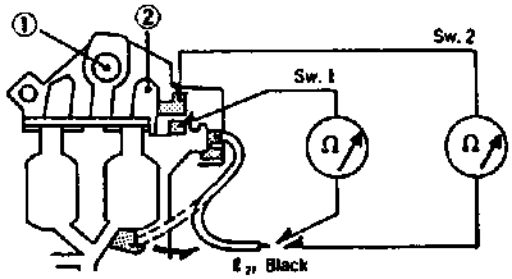
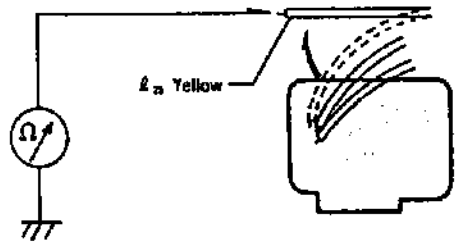
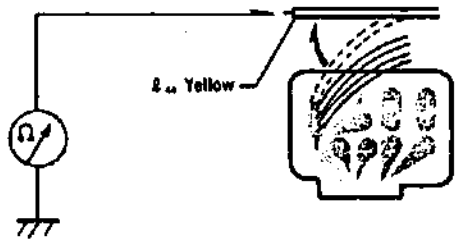
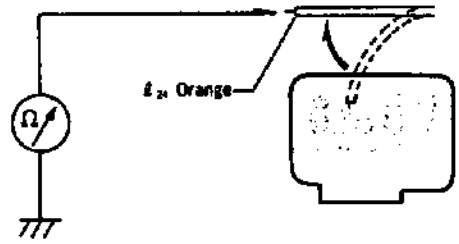


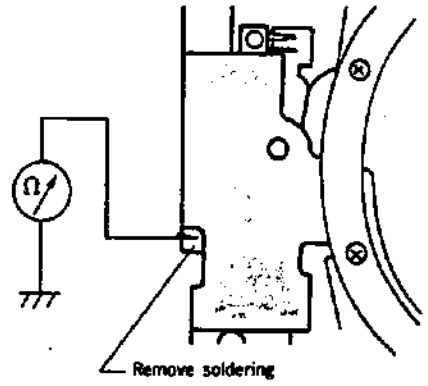
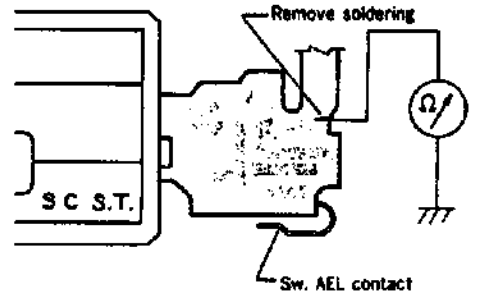
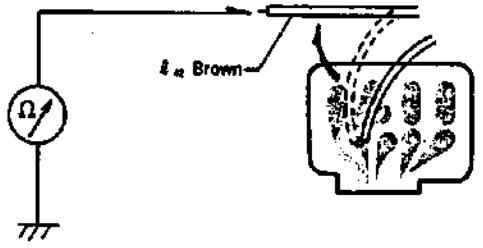
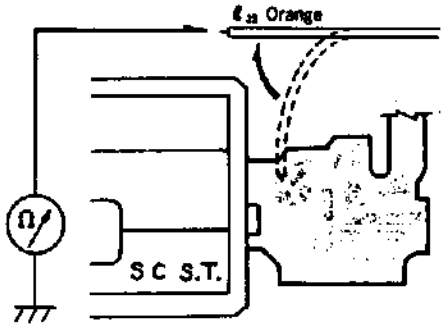
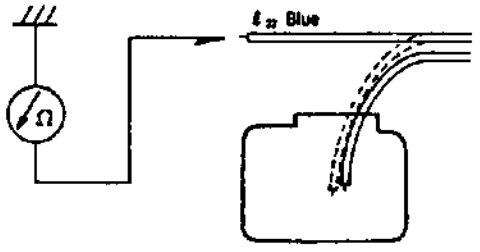
2) Release the shutter ten times at bulb setting.
If the indicated values of EE tester and dispersion (difference between max. and min. value) do not meet Table below, see page 6 "2. Exposure failure".

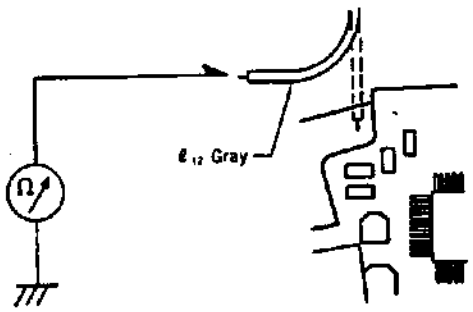
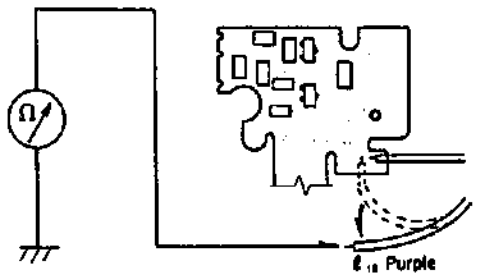
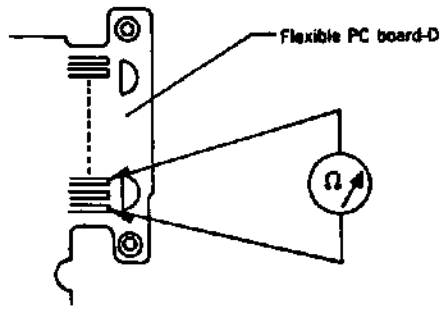
Indicated value	Dispersion
within ±0.5Ev	within 0.5Ev

[3] Switch and electrical element checking

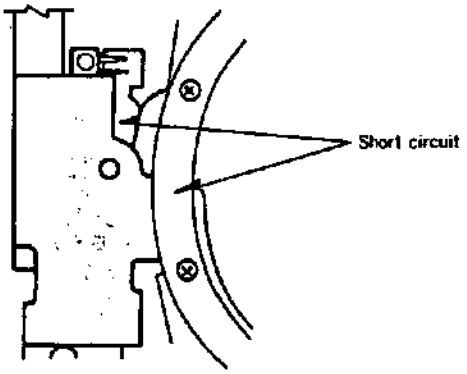
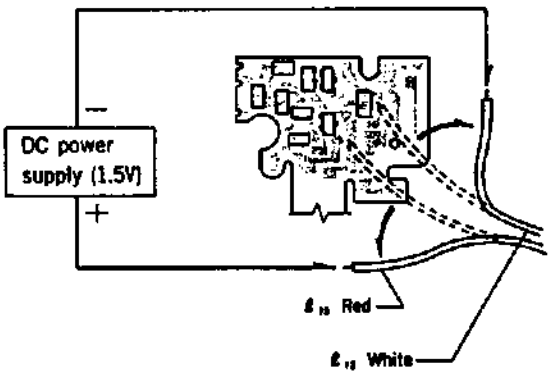
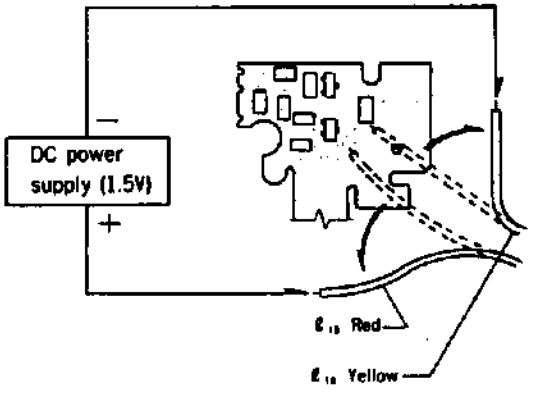
1. Switch

Sw.	Checking procedure	Judgment
Sw. 1 Sw. 2		Sw. 1 : Should be ON by depressing ① slightly. Sw. 2 : Should be ON by depressing ②.
Sw. 4		Turn motor friction set counterclockwise twice and ther turn clockwise twice : Should be ON. Turn spool slowly with finger : Should be OFF when sprocket locks.
Sw. 400		Turn motor friction set counterclockwise : Should be ON when mirror lifts up by 2/3. Turn motor friction set clockwise from the position of mirror fully up : Should be OFF when mirror is turned down by 1/3.
Sw. 40		The same as for Sw. 400 (For timing adjustment, see Repair Guide p. 11)

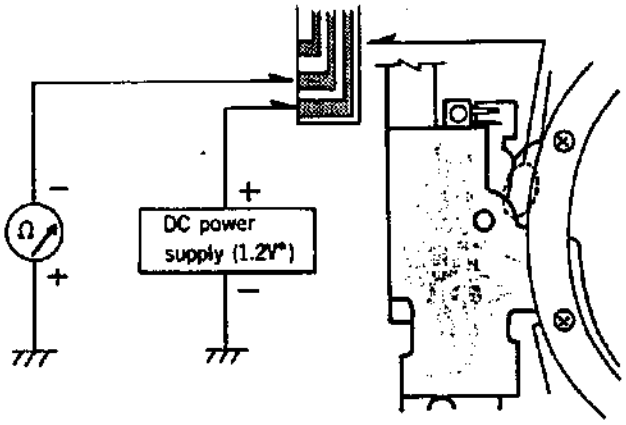
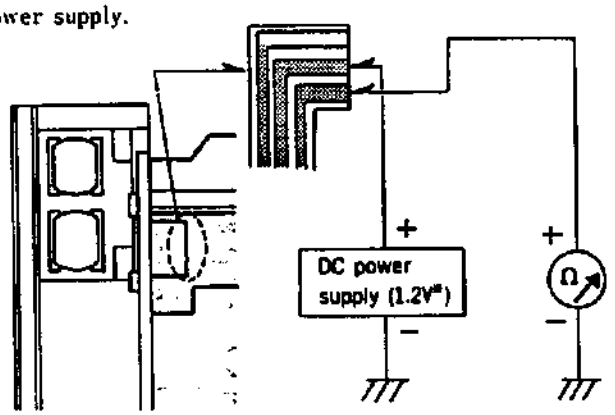
Sw.	Checking procedure	Judgment
Sw. SLS		Conductivity ON (indicates registance) without film. Conductivity OFF with film.
Sw. AEL		ON by pushing the contact.
Sw. REW 1		Should be ON by sliding rewind switch lever.
Sw. REW 2		With back cover closed, slide rewind switch lever : Should be ON when rewind switch lever locks.
Sw. REW 3		Turn winding gears with finger : Should be turned ON-OFF-ON.

Sw.	Checking procedure	Judgment
Sw. AF/M		Set Sw. AF/M Should be OFF at "AF". Should be ON at "M".
Sw. X1 Sw. X2		Release shutter in "bulb" setting. Should be ON when 1st shutter blade has run completely. Should be OFF when 2nd shutter blade has run completely.
Sw. RC		Should be ON with back cover open. Should be OFF with back cover closed.

2. Magnet

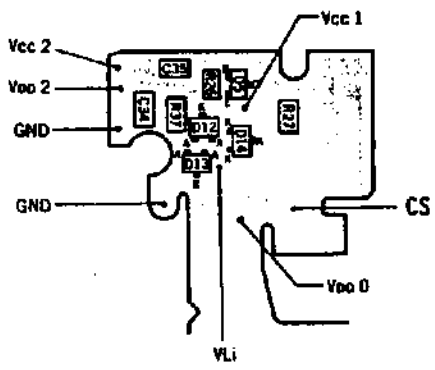
SL	Checking procedure	Judgment
SL-3		Connect soldering point of SL_3 lead wire (white) with GND : SL_3 should be separated (clicking). Aperture ring should lock and not turn.
SL-4	Unsolder SL_4 lead wires (ℓ_{13} White, ℓ_{15} Red), and connect them with DC power supply. 	1. Turn motor friction set counterclockwise, and unlock shutter (running of 2nd shutter blade). 2. Turn power OFF : 1st shutter blade should run (Check by sound of running or check visually from mirror box side)
SL-5	Unsolder SL_5 lead wires (ℓ_{14} Yellow, ℓ_{15} Red), and connect them with DC power supply. 	1. Turn motor friction set counterclockwise, and unlock shutter. 2. Shutter should remain open until power is turned OFF.

3. Encoder

	Checking procedure	Judgment
Aperture (P.I 1)	Solder lead wire for measuring and connect it with DC power supply. 	Turn aperture ring slowly with finger : Pointer of circuit tester should move.
AF (P.I 2)	Solder lead wire for measuring and connect it with DC power supply. 	Turn AF coupler slowly with finger : Pointer of circuit tester should move.

※ : DO NOT SET DC-POWER-SUPPLY AT VOLTAGE MORE THAN 1.2V ; otherwise LED will be damaged.

4. DC/DC converter

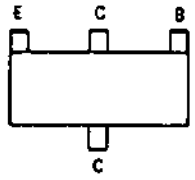


Check voltage between printed wires shown in the figure and GND. (Sw. 1 ON)

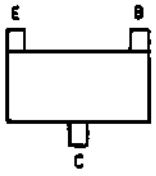
Vcc 1	6V
Vcc 2	13V
VDD 0	6V
VDD 2	6V
VLi	3V
CS	Less than 100mV

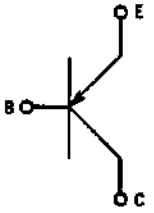
4. Transistor

Q_3, Q_4, Q_{13}, Q_{14}



Q_5



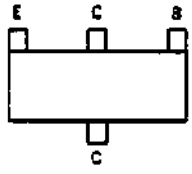


(PNP)

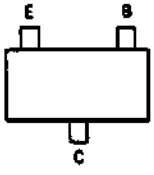
Check conductivity between the terminals of B, C, E.

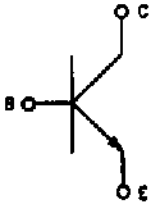
Terminals	B-C	B-C	B-E	B-E
Polarity of circuit tester	+ −	+ −	+ −	+ −
Pointer of circuit tester	Should not move	Should move	Should move	Should not move

Q_1, Q_2, Q_{11}, Q_{12}



Q_{15}, Q_{16}





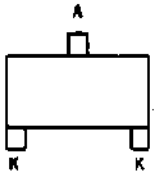
(NPN)

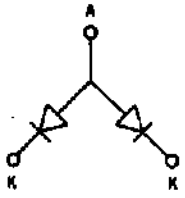
Check conductivity between the terminals of B, C, E.

Terminals	B-C	B-C	B-E	B-E
Polarity of circuit tester	+ −	+ −	+ −	+ −
Pointer of circuit tester	Should move	Should not move	Should not move	Should move

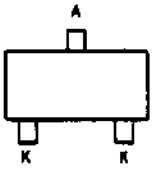
5. Diode

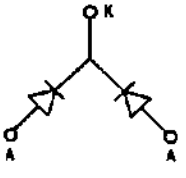
D_2, D_{11}, D_{14}



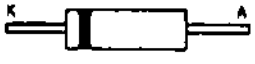


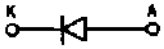
D_{12}, D_{13}





D_1, D_{15}, D_{16}



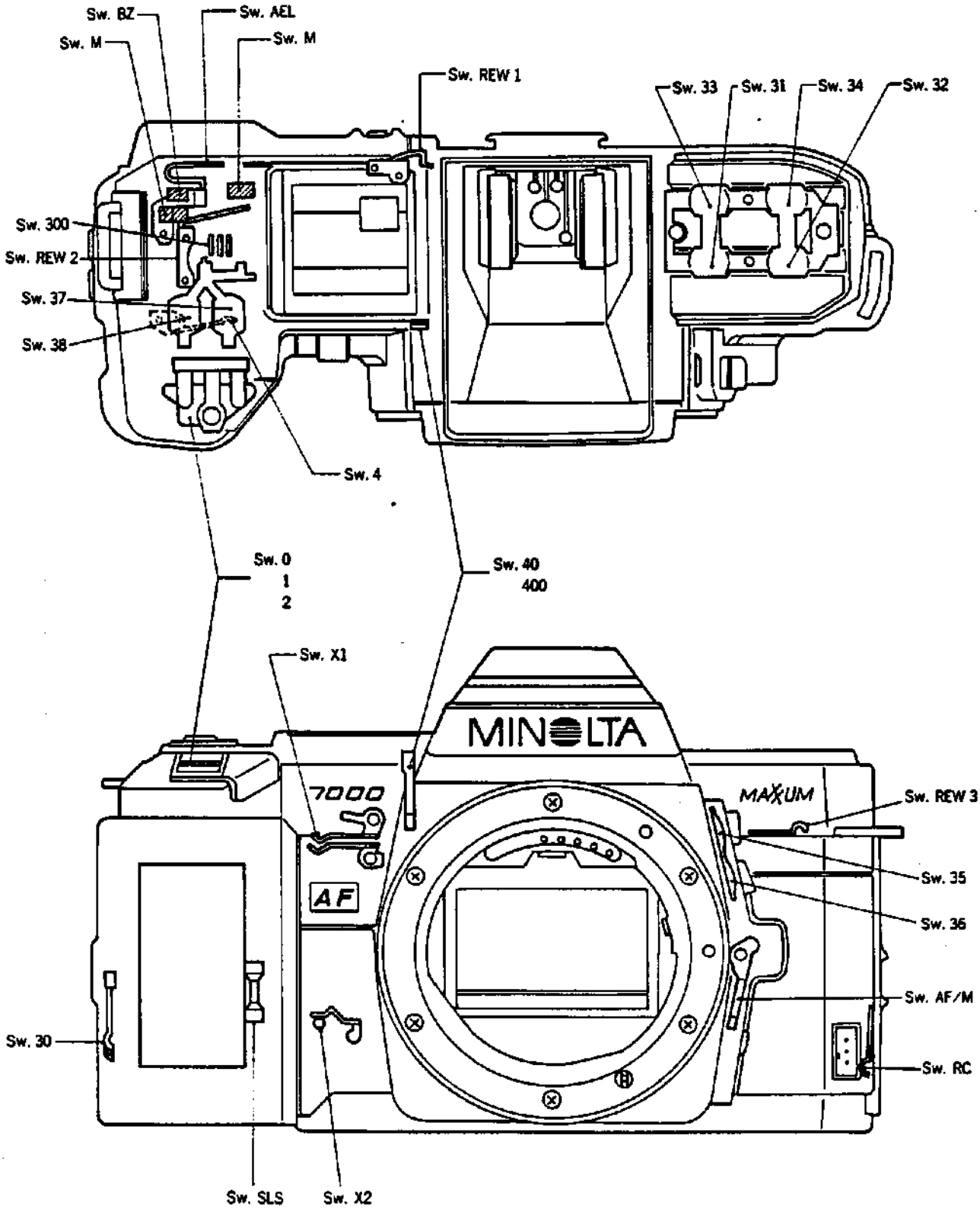


Check conductivity between the terminals of A, K.

Terminals	A-K	A-K
Polarity of circuit tester	+ −	− +
Pointer of circuit tester	Should not move	Should move

[4] Function of switches

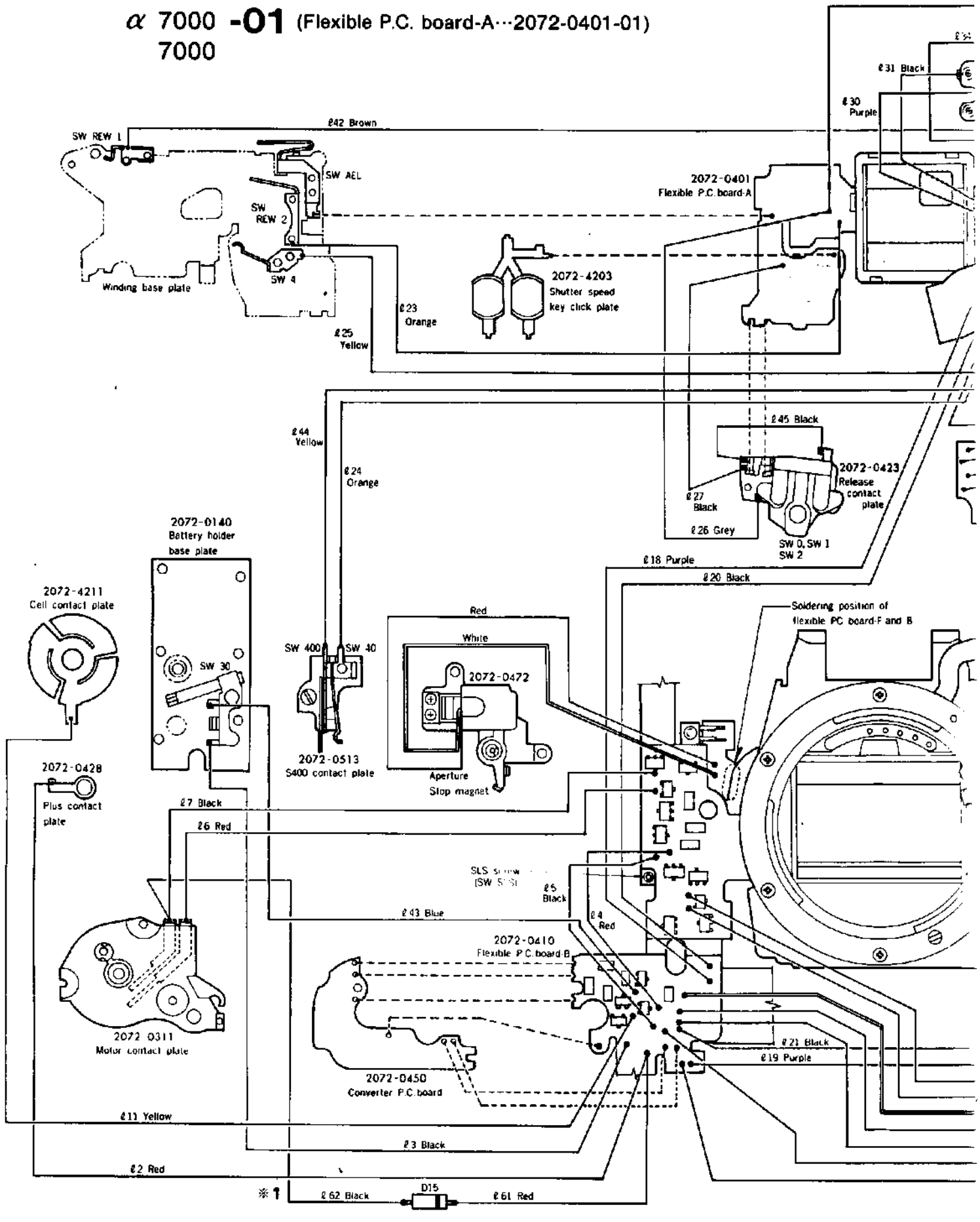
(1) Position of switches

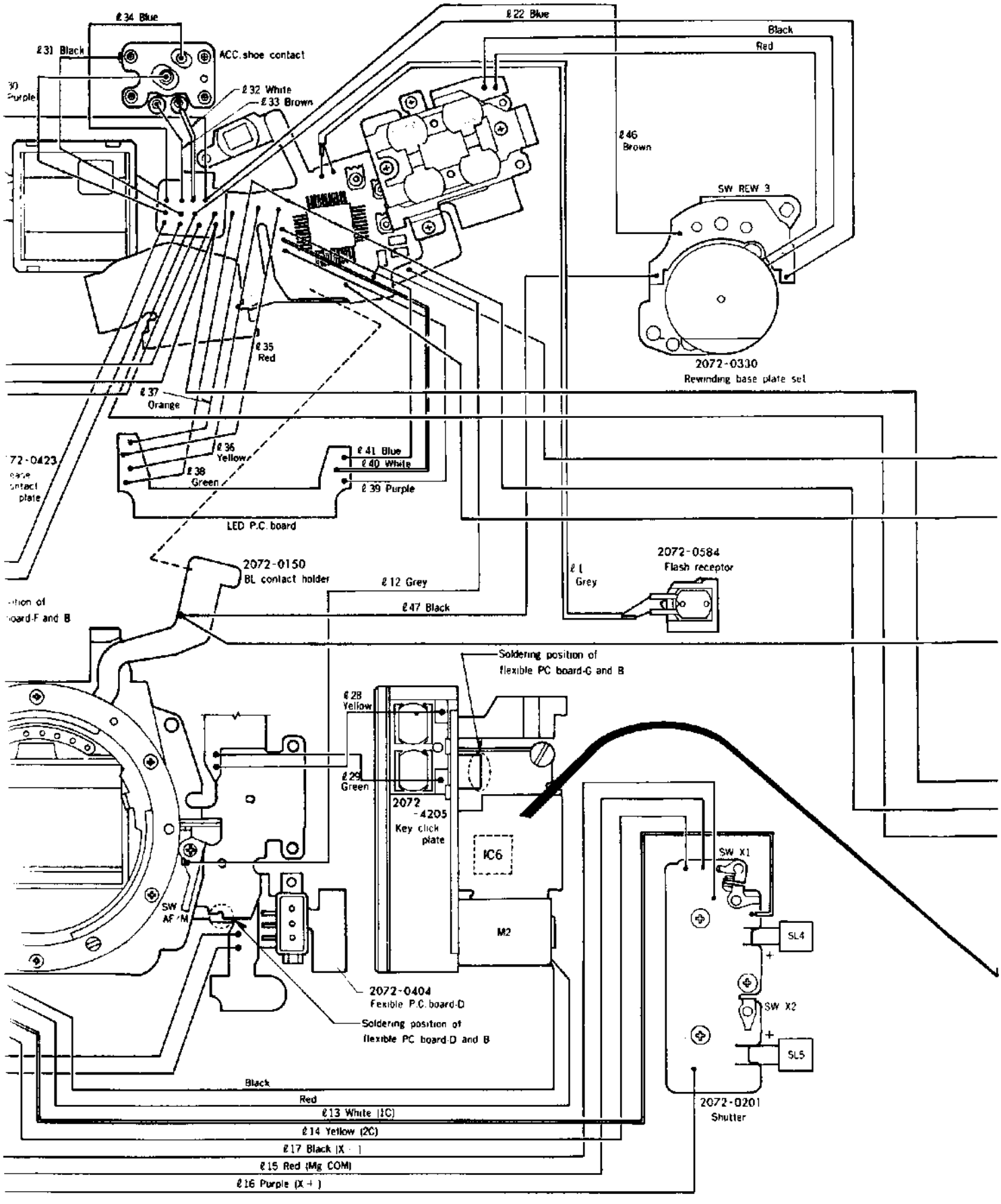


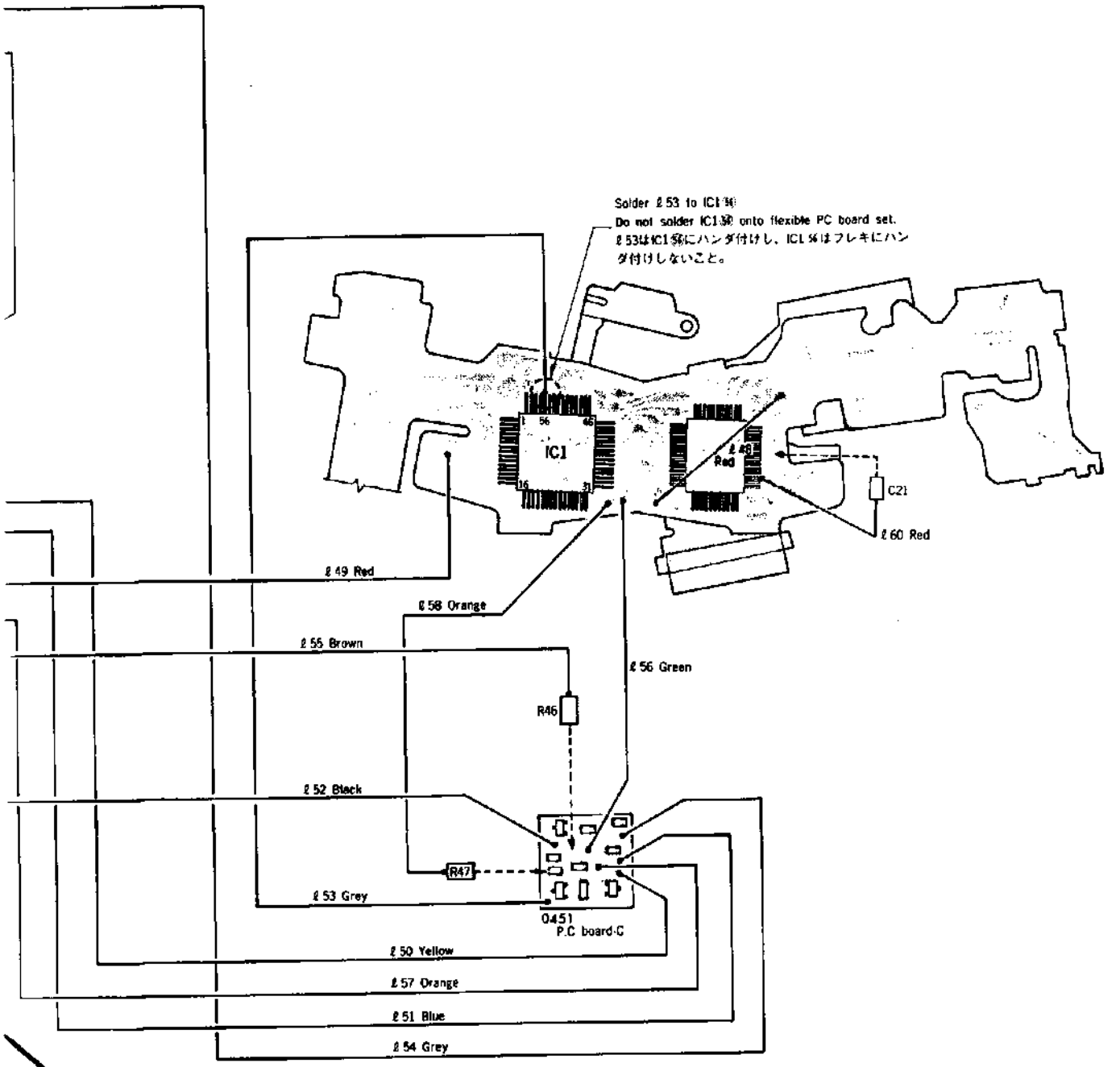
(2) Function of switches

Mark	Name	Condition of operation
Sw. 0	Touch switch	ON by touching operation button
Sw. 1	Metering switch	Remains ON for 10 sec before shutter release ON by depressing operating button to click stop
Sw. 2	Release switch	ON by depressing operating button all the way
Sw. 4	Winding-completion switch	OFF→ON with winding start ON→OFF with winding completion
Sw. 40	Mirror-up switch	ON with mirror-up completion OFF with mirror-down
Sw. 400	Sub-switch of Sw. 4	
Sw. M	Main switch	By sliding main switch Sw. M ON, Sw. BZ ON
Sw. Bz	Buzzer switch	By sliding main switch Sw. M •))) , Sw. BZ OFF
Sw. RC	Back-cover switch	OFF by closing back-cover
Sw. REW 1	Rewinding switch 1	ON by sliding rewind switch lever
Sw. REW 2	Rewinding switch 2	ON by locking rewind switch lever
Sw. REW 3	Rewinding switch 3	ON→OFF→ON with one rotation of rewinding fork
Sw. SLS	Film detecting switch	OFF with film wound by spool
Sw. AEL	AE lock switch	ON by derpessing AE lock button
Sw. AF/M	Focus mode switch	By sliding focus mode switch ON in M mode, OFF in AF mode
Sw. X1	Sync switch 1	OFF→ON with completion of 1st shutter blade traveling OFF with completion of 2nd shutter blade traveling
Sw. X2	Sync switch 2	• ON with shutter charge start • OFF with completion of 2nd shutter blade traveling
Sw. 300	Program reset switch	ON by depressing program reset key
Sw. 30	Battery switch	ON→OFF by attaching battery grip
Sw. 31	ISO key switch	• Mode and value are set by depressing shutter speed key (or aperture key) with control key* held down. ※General name for the four keys • Metering and indication circuits are activated also by control key ON. The indication, corresponding to the key in use, will be displayed and continue for 10 sec after the key OFF.
Sw. 32	+/− key switch	
Sw. 33	Drive mode key switch	
Sw. 34	Exposure mode key switch	
Sw. 35	F stop-up key switch	• In P, A, S modes With up key pressed : set shutter speed faster, aperture (lens opening) larger. With down key pressed : sets shutter speed slower, aperture (lens opening) smaller. • When the key is held down, the value changes rapidly. Each time the key is pressed, the value changes by one stop corresponding to pressed control key.
Sw. 36	F stop-down key switch	
Sw. 37	Shutter speed down key switch	
Sw. 38	Shutter speed up key switch	

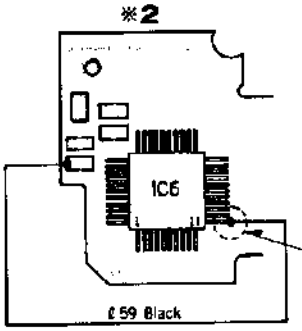
MAXXUM 7000
α 7000 -01 (Flexible P.C. board-A···2072-0401-01)
7000




ℓ34 Blue
ℓ31 Black
ACC. shoe contact
ℓ32 White
ℓ33 Brown
ℓ22 Blue
Black
Red
ℓ46 Brown
SW REW 3
2072-0330
Rewinding base plate set
ℓ35 Red
ℓ37 Orange
ℓ36 Yellow
ℓ38 Green
ℓ41 Blue
ℓ40 White
ℓ39 Purple
LED P.C. board
2072-0150
BL contact holder
ℓ12 Grey
ℓ47 Black
ℓ1 Grey
2072-0584
Flash receptor
Soldering position of flexible PC board-C and B
ℓ28 Yellow
ℓ29 Green
2072-4205
Key click plate
IC6
M2
SW AF/M
SW X1
SL4
SW X2
SL5
2072-0404
Flexible P.C. board-D
Soldering position of flexible PC board-D and B
2072-0201
Shutter
Black
Red
ℓ13 White (2C)
ℓ14 Yellow (2C)
ℓ17 Black (X-)
ℓ15 Red (Mg COM)
ℓ16 Purple (X+)



※2



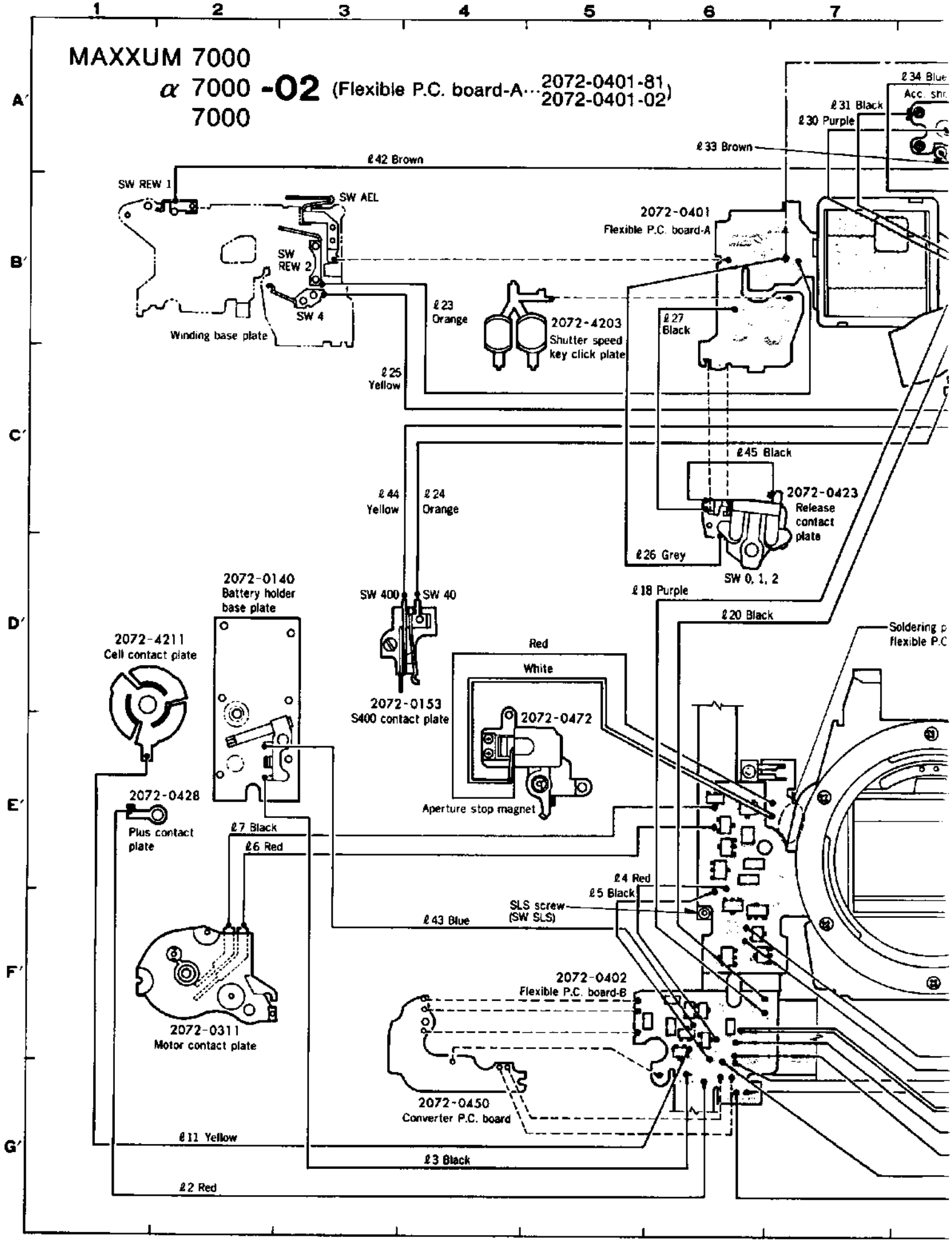
Solder ℓ59 to IC6⑪.
Do not solder IC6⑪ onto flexible PC board set.
ℓ59はIC6⑪にハンダ付けし、IC6⑪はフレキにハンダ付けしないこと。

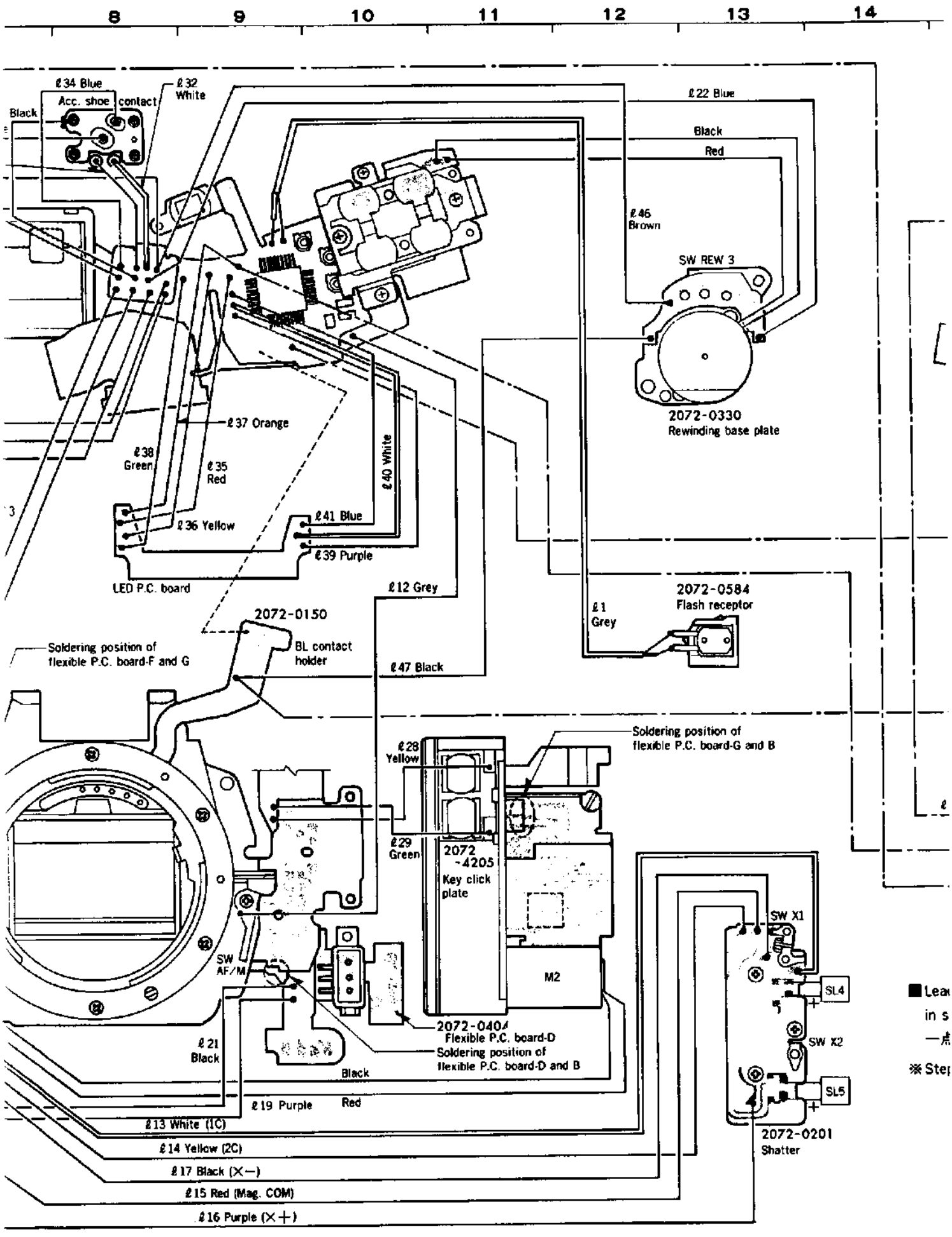
※1. ℓ61, ℓ62, D15 have been employed only for initial mass production (7000 units). IC6⑪ (※2) is connected to flexible PC board set by soldering.
ℓ61, ℓ62, D15は量産当初（約7,000台）の回路で、IC6⑪（※2）はフレキにハンダ付けされている。

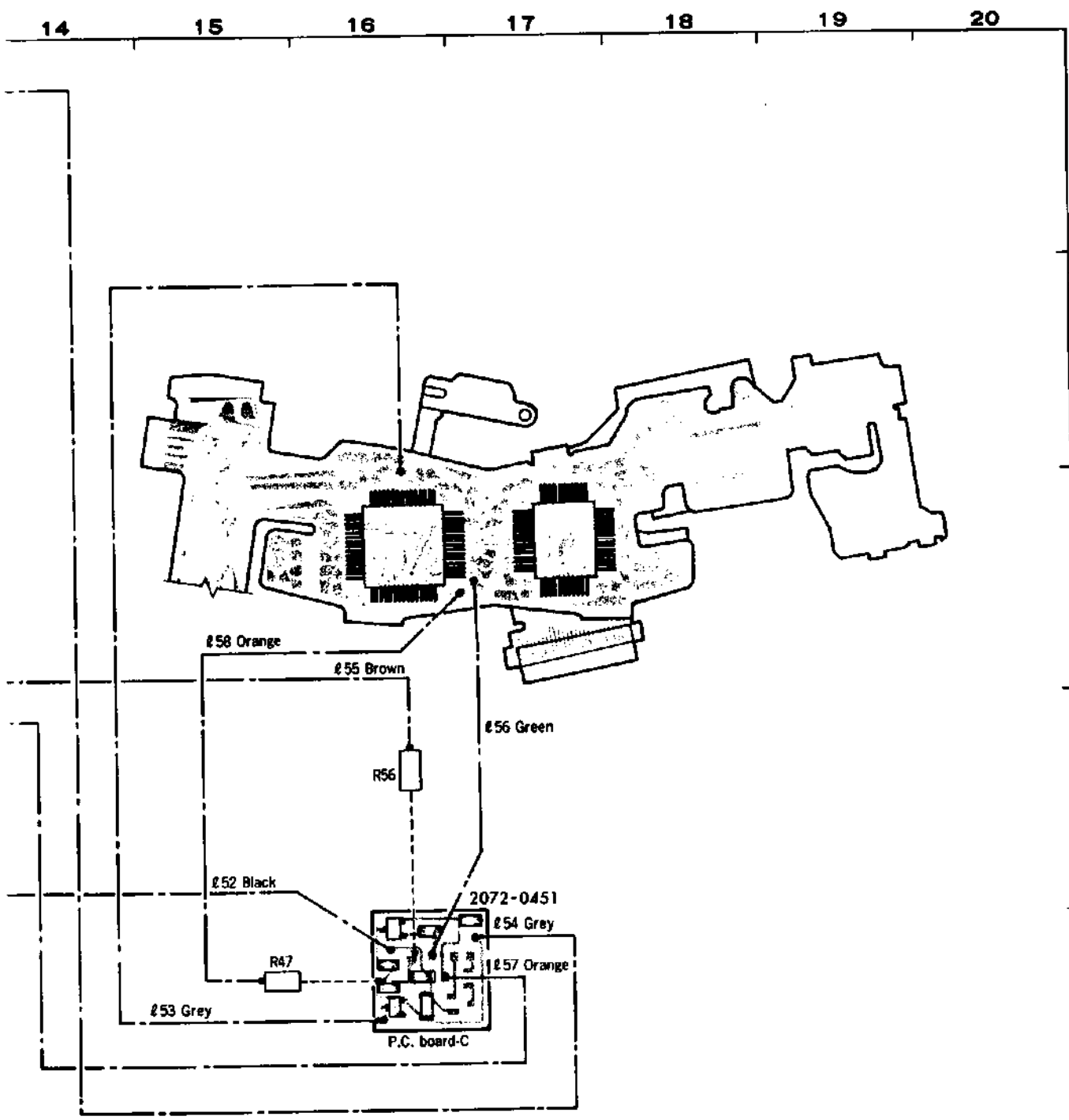
※2. Revised circuit (after 7000 units)
7,000台以降の回路。

- Both circuits (※1, ※2) can be employed concurrently.
※1，※2の回路は重複してもよい。

MAXXUM 7000
α 7000 -02 (Flexible P.C. board-A···2072-0401-81, 2072-0401-02)
7000




8
9
10
11
12
13
14
ℓ34 Blue
Acc. shoe contact
ℓ32 White
Black
ℓ22 Blue
Black
Red
ℓ46 Brown
SW REW 3
2072-0330
Rewinding base plate
ℓ37 Orange
ℓ38 Green
ℓ35 Red
ℓ40 White
ℓ41 Blue
ℓ36 Yellow
ℓ39 Purple
LED P.C. board
ℓ12 Grey
2072-0584
Flash receptor
ℓ1 Grey
2072-0150
BL contact holder
Soldering position of flexible P.C. board-F and G
ℓ47 Black
Soldering position of flexible P.C. board-G and B
ℓ28 Yellow
ℓ29 Green
2072-4205
Key click plate
SW X1
SW AF/M
M2
SL4
SW X2
SL5
2072-0404
Flexible P.C. board-D
Soldering position of flexible P.C. board-D and B
ℓ21 Black
Black
ℓ19 Purple
Red
2072-0201
Shatter
ℓ13 White (1C)
ℓ14 Yellow (2C)
ℓ17 Black (X−)
ℓ15 Red (Mag. COM)
ℓ16 Purple (X+)



SL4

■Lead wires (shown by alternate long and short dash line) and PC board-C set (0451) are discontinued in step 3.*

一点鎖線のリード線及びC基板はstep 3*では廃止されています。

X2

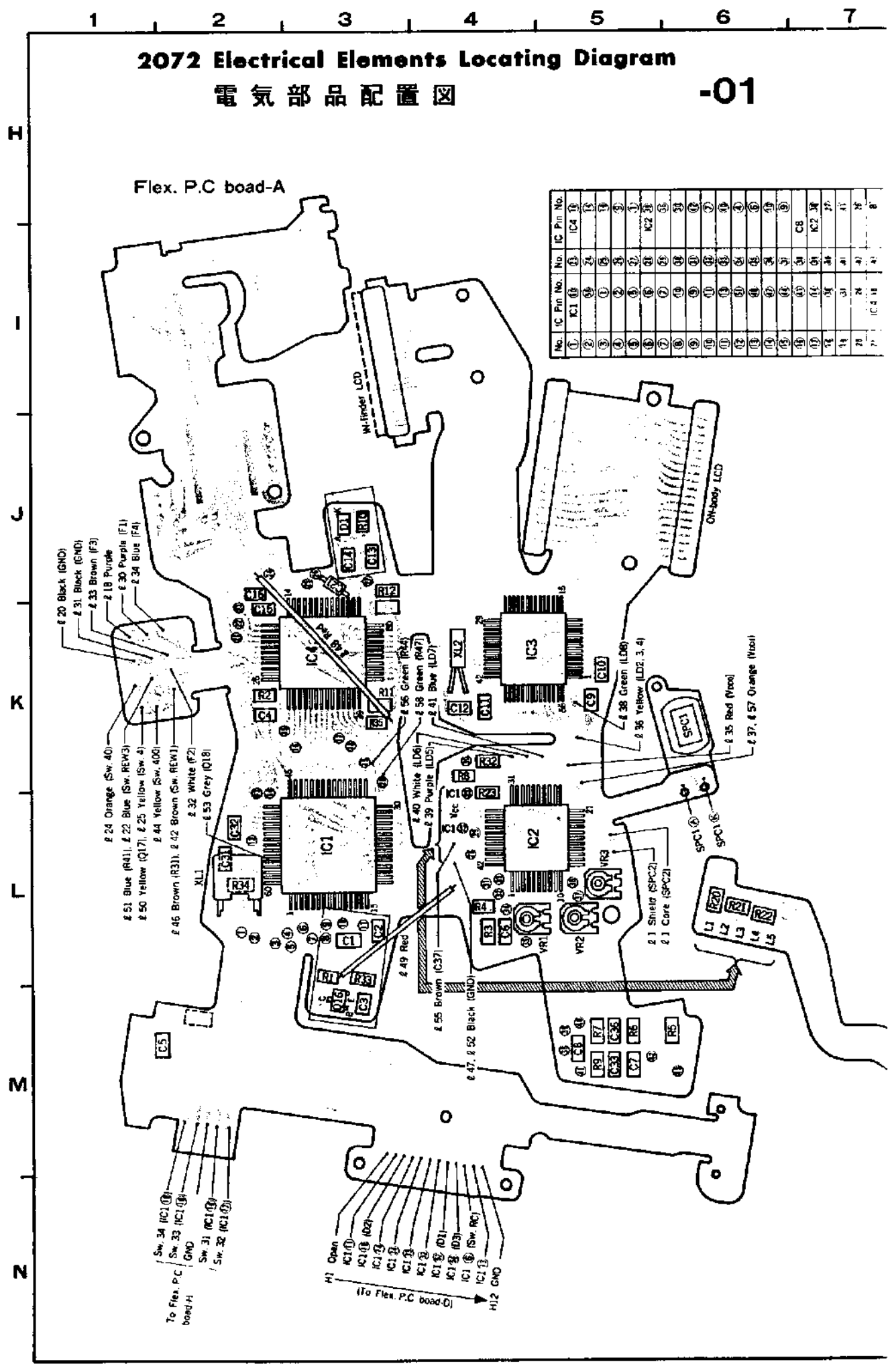
※Step 3 : See Service manual supplementary information No. 2072-001.

サービスマニュアルサプルメンタリーインフォメーションNo. 2072-001参照。

SL5

2072 Electrical Elements Locating Diagram
電気部品配置図

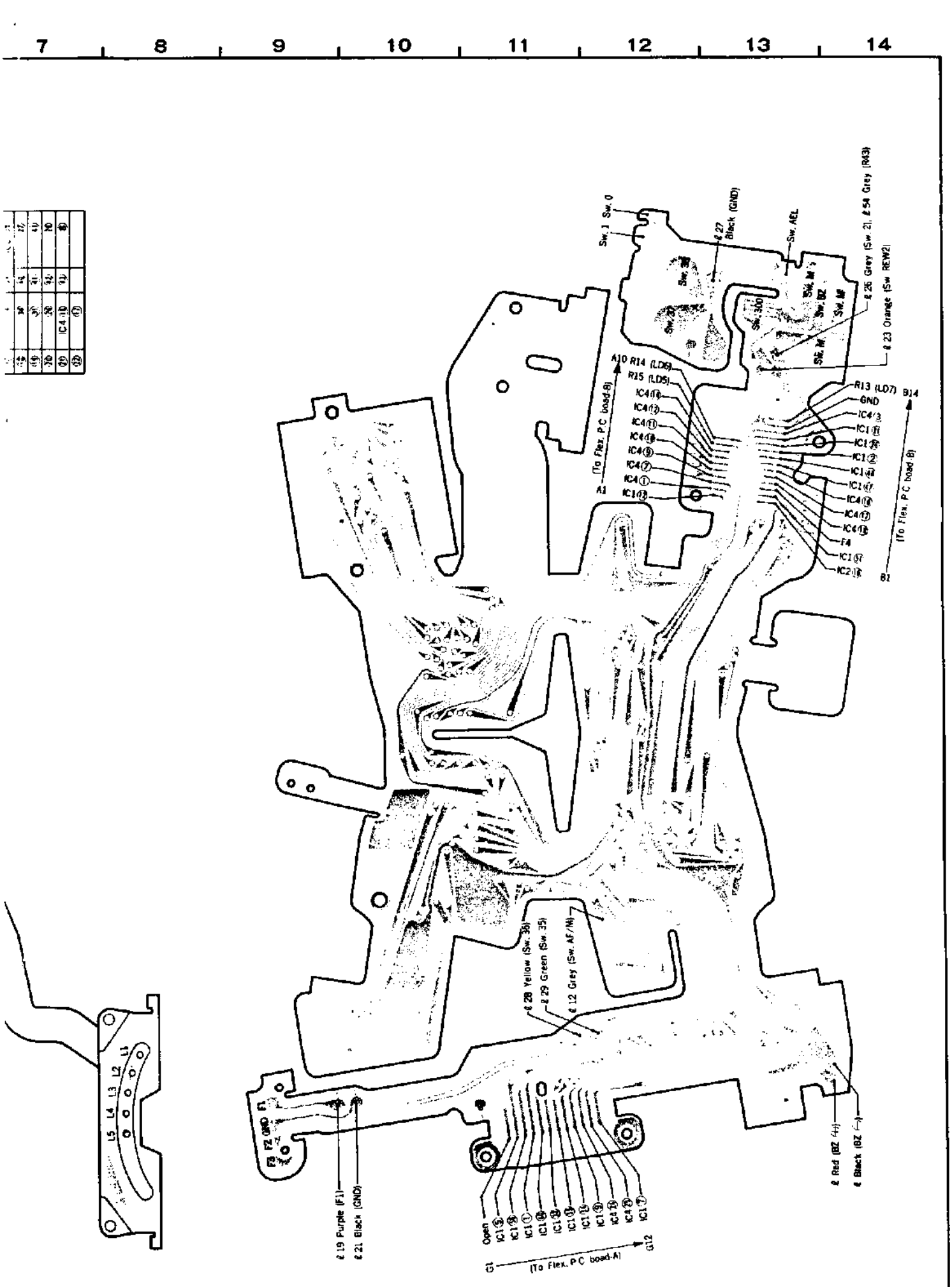
-01



No.	IC Pin No.	No.	IC Pin No.	No.	IC Pin No.
①	IC1 ⑯	⑬	IC4 ⑲		
②	⑮	㉔	⑱		
③	⑭	㉕	⑰		
④	⑬	㉖	⑯		
⑤	⑫	㉗	⑮	㊶	IC2 ㊱
⑥	⑪	㉘	⑭	㊷	㉟
⑦	⑩	㉙	⑬	㊸	㉞
⑧	⑨	㉚	⑫	㊹	㉝
⑨	⑧	㉛	⑪	㊺	㉜
⑩	⑦	㉜	⑩	㊻	㉛
⑪	⑥	㉝	⑨	㊼	㉚
⑫	⑤	㉞	⑧	㊽	㉙
⑬	④	㉟	⑦	㊾	㉘
⑭	③	㊱	⑥	㊿	㉗
⑮	②	㊲	⑤	(51)	㉖
⑯	①	㊳	④	(52)	㉕
⑰	㉔	㊴	③	(53)	㉔
⑱	㉓	㊵	②	(54)	㉓
					IC4 ⑱

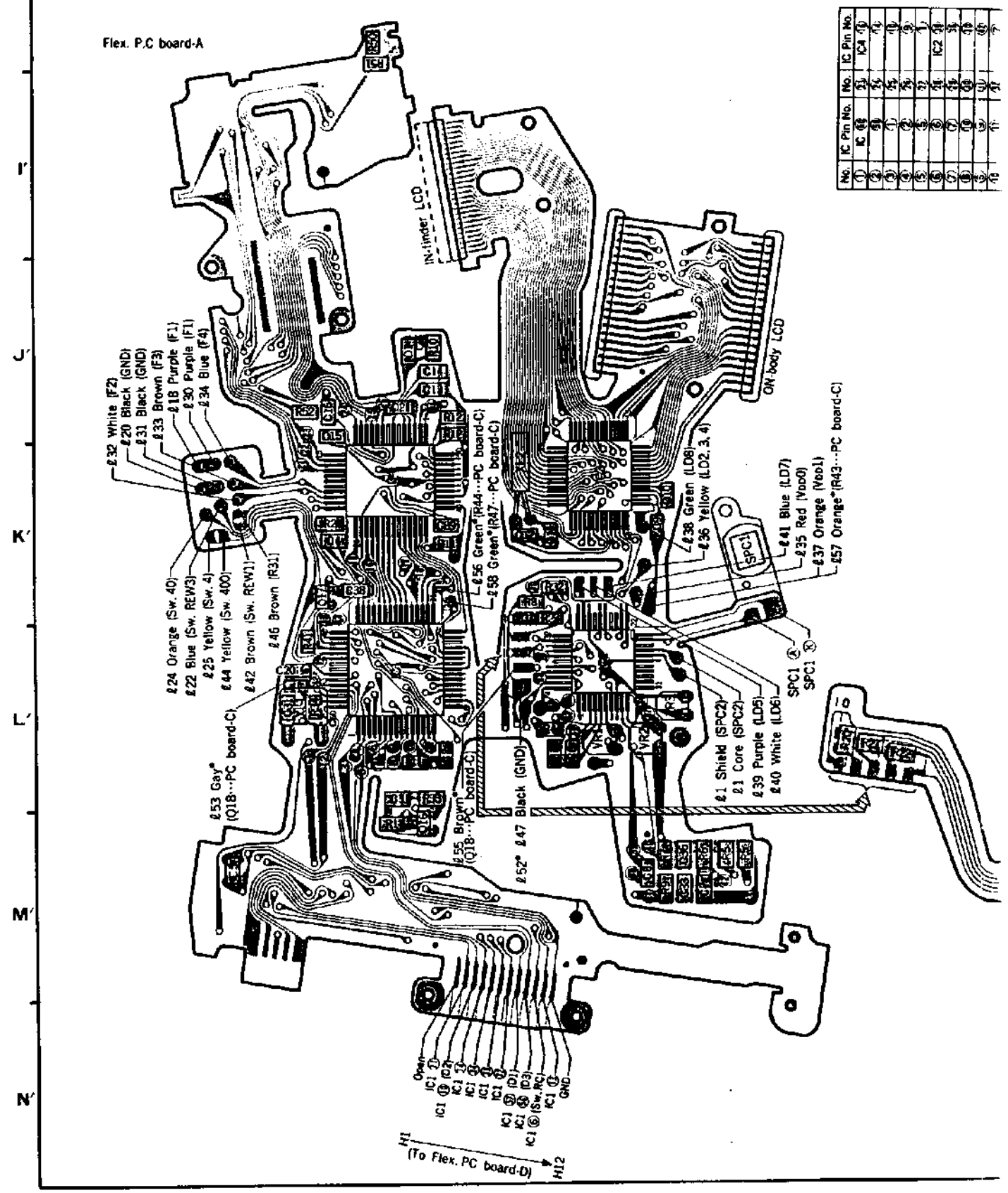
C8

No.	IC Pin No.
①	IC2 ㊱
②	㉟
③	㉞
④	㉝
⑤	㉜
⑥	㉛
⑦	㉚
⑧	㉙
⑨	㉘
⑩	㉗
⑪	㉖
⑫	㉕
⑬	㉔
⑭	㉓

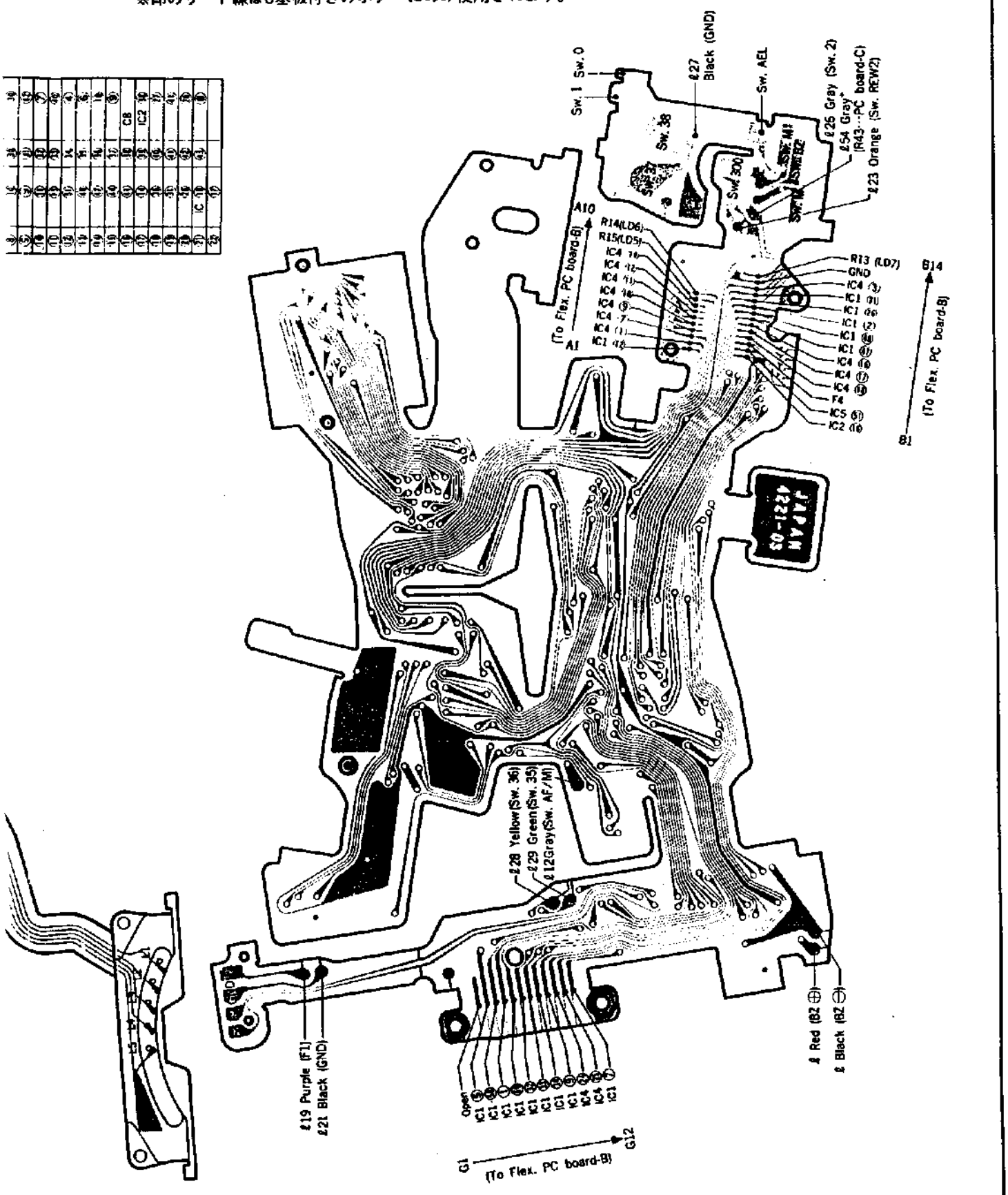

7
8
9
10
11
12
13
14
Sw. 1 Sw. 0
Black (GND)
Sw. AEL
Sw. 300
Sw. BZ
Sw. AF
Sw. M
Sw. M
Sw. M
Sw. M
Orange (Sw. REW2)
Grey (Sw. 2), Grey (RM3)
A10 R14 (LD6)
R15 (LD5)
IC4⑩
IC4⑬
IC4⑪
IC4⑭
IC4⑨
IC4⑦
IC4①
IC1⑱
A1
(To Flex. P.C board-B)
R13 (LD7)
GND
IC4⑤
IC1⑪
IC1⑳
IC1②
IC1④
IC1⑰
IC4⑥
IC4⑫
IC4⑮
F4
IC1⑨
IC2⑱
B14
B1
(To Flex. P.C board-B)
Yellow (Sw. 36)
Green (Sw. 35)
Grey (Sw. AF/M)
F3 F2 GND F1
Purple (F1)
Black (GND)
Open
IC1⑤
IC1⑧
IC1①
IC1⑯
IC1⑬
IC1⑩
IC1⑮
IC1⑨
IC4⑤
IC4⑧
IC1⑦
G1
G12
(To Flex. P.C board-A)
Red (BZ +)
Black (BZ -)
L5 L4 L3 L2 L1

2072 Electrical Elements Locating Diagram

電気部品配置図-02

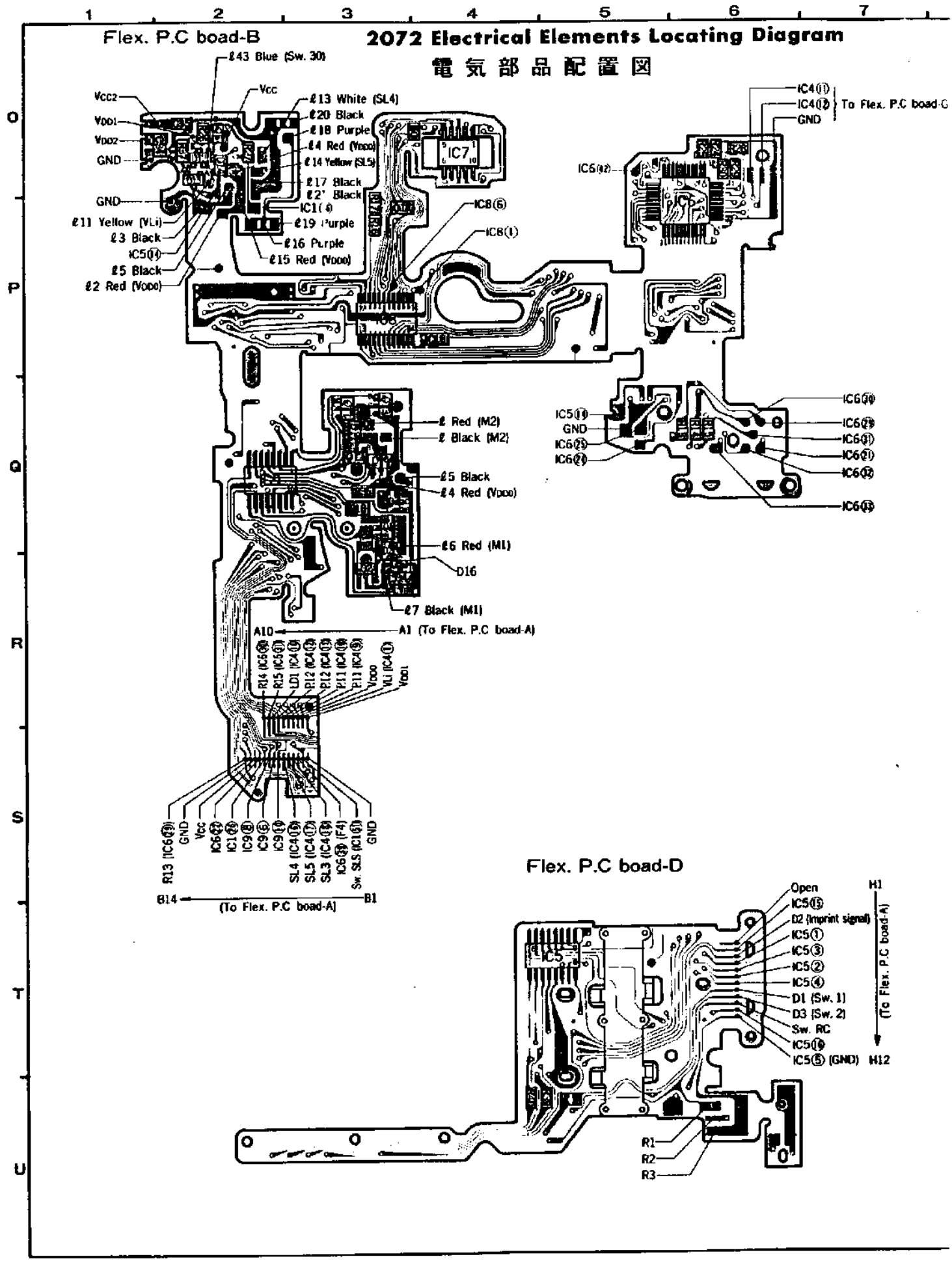


※marked lead wires are only for body with P.C board-C
※印のリード線はC基板付きのボデーにのみ使用されます。

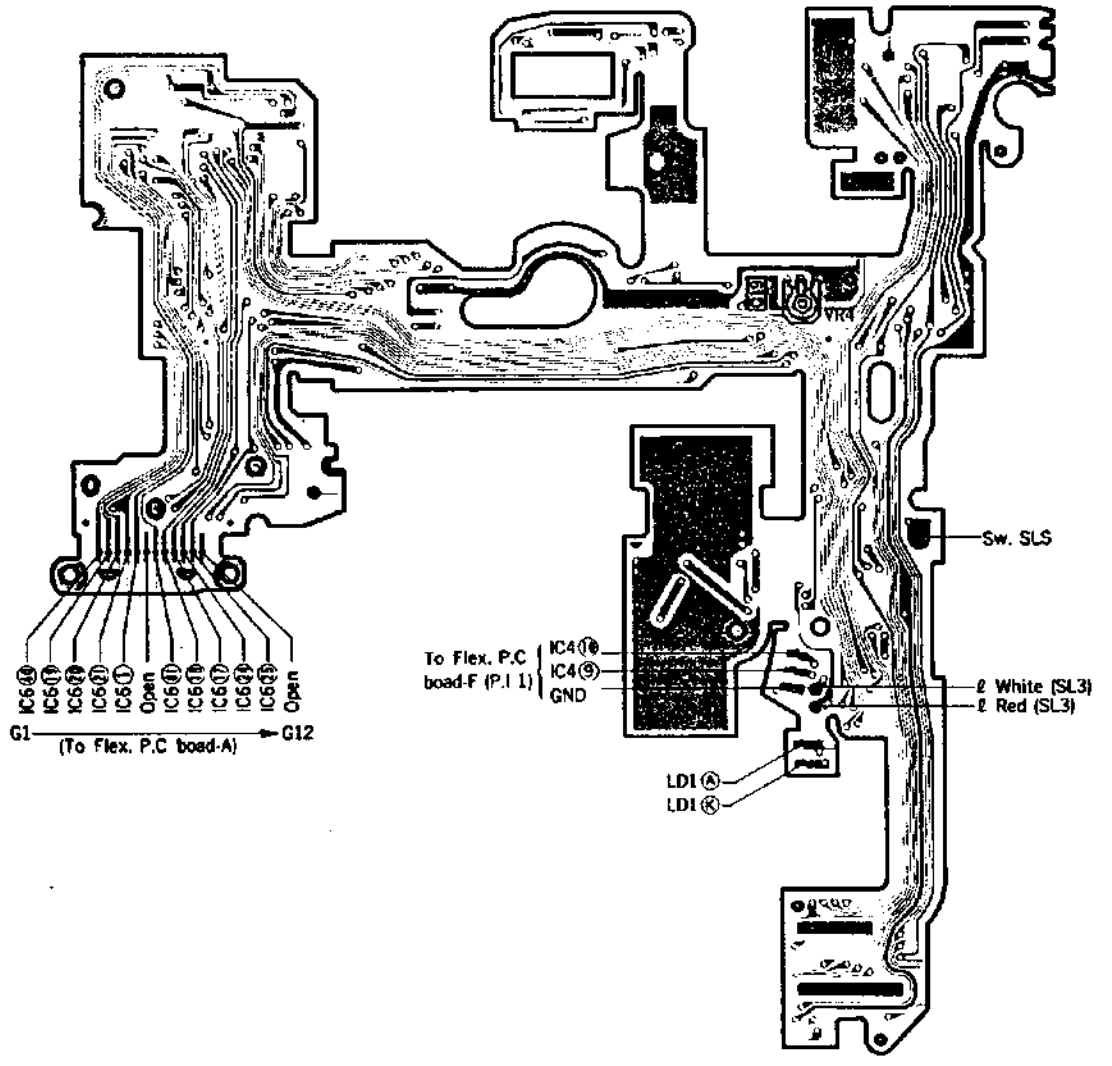


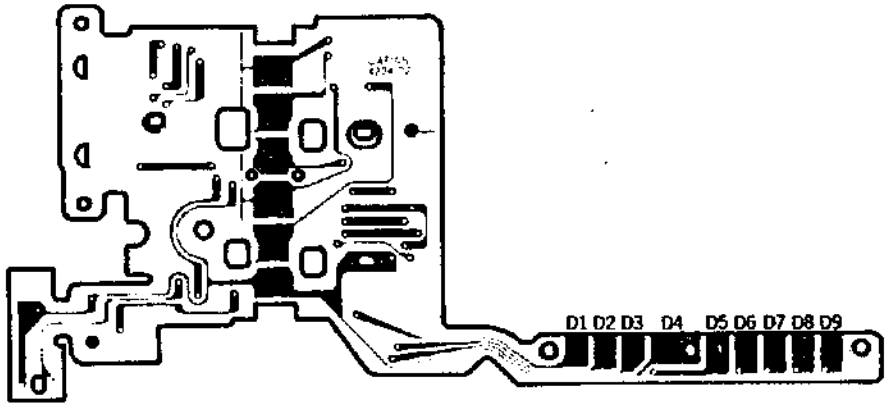
2072 Electrical Elements Locating Diagram

電 気 部 品 配 置 図

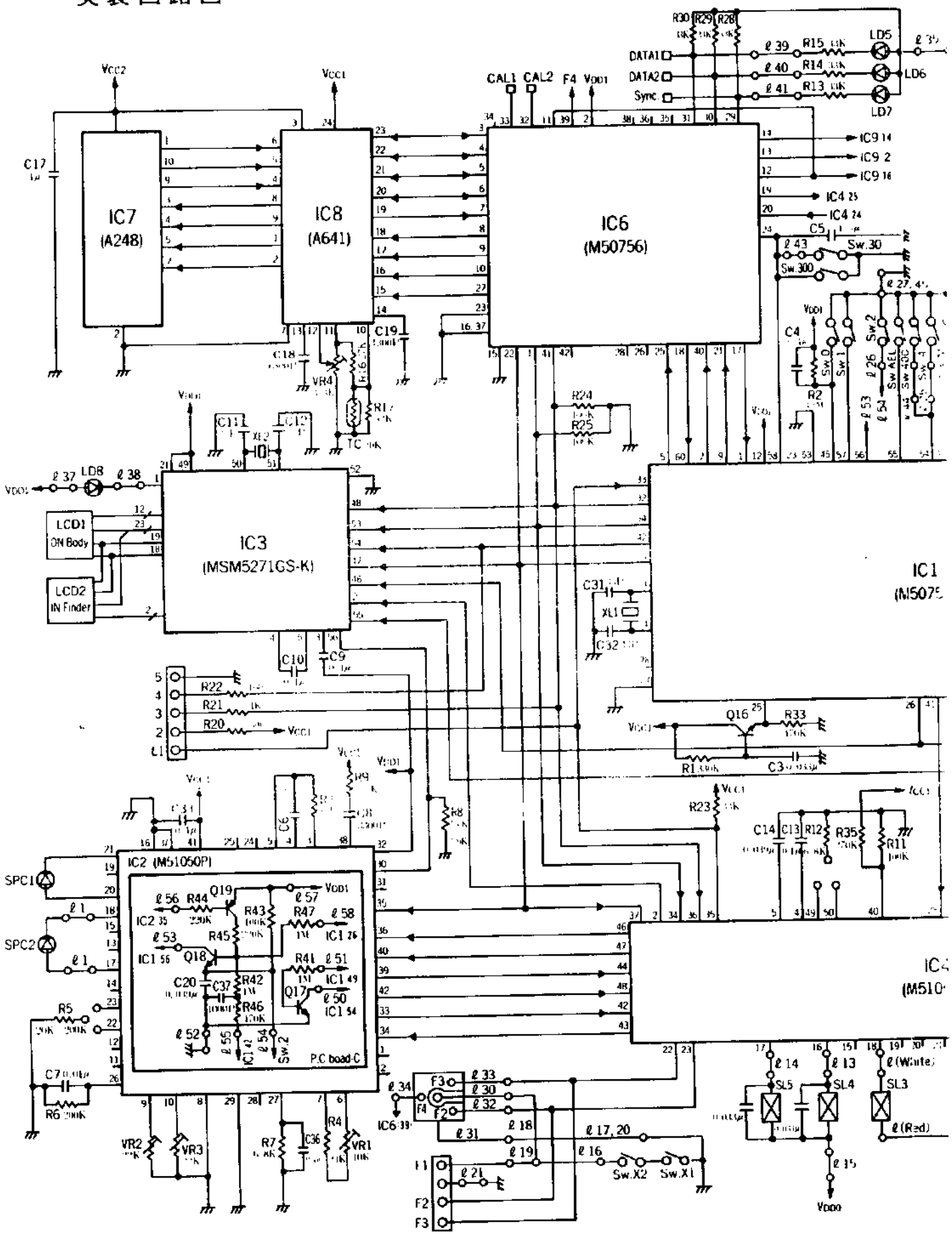


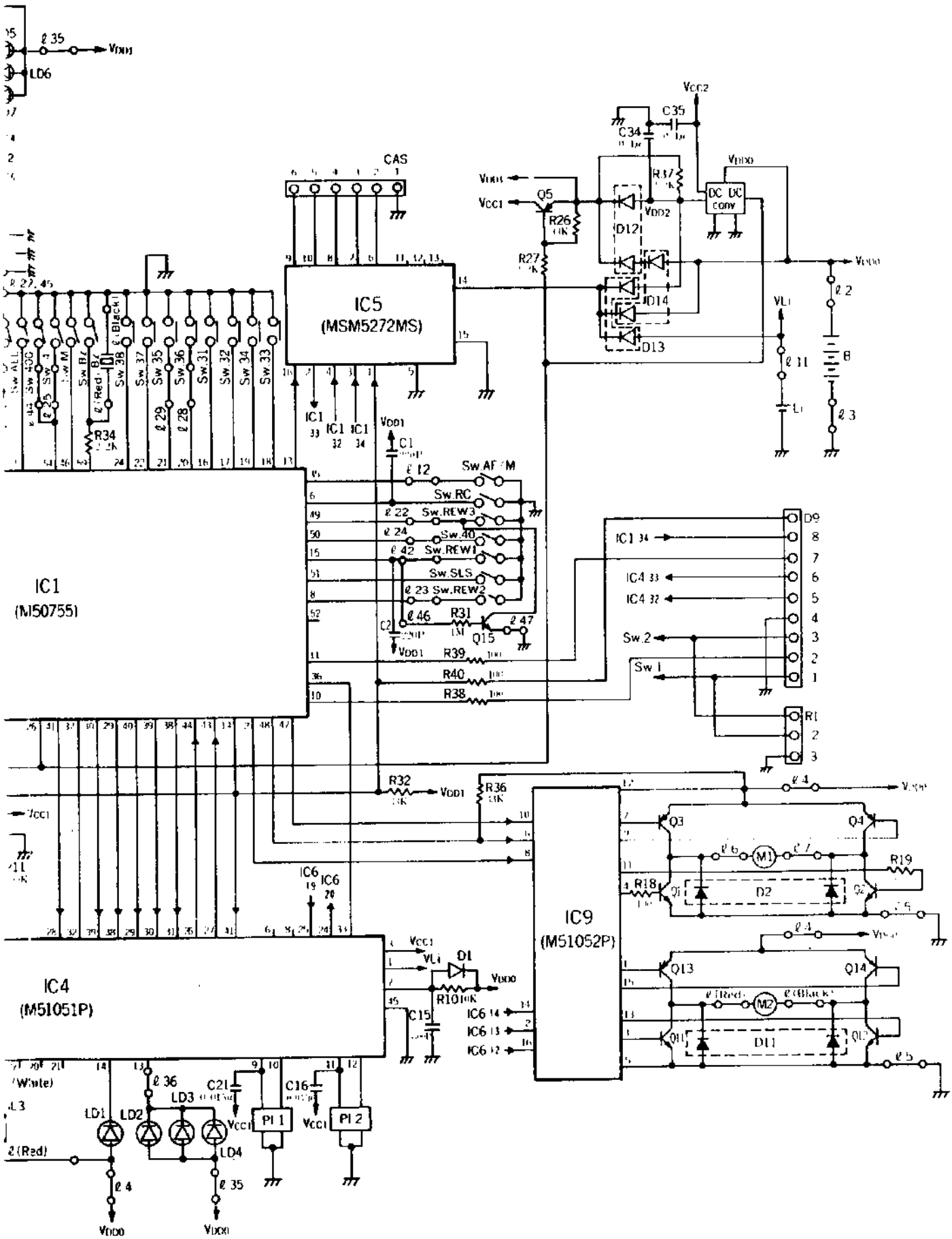
P.C board-G (P.I 2)





2072 Substantial Circuit Diagram
実装回路図




IC5
(MSM5272MS)
IC1
(M50755)
IC4
(M51051P)
IC9
(M51052P)
CAS
Sw.AF/M
Sw.RC
Sw.REW3
Sw.40
Sw.REW1
Sw.SLS
Sw.REW2
Sw.2
Sw.1
DC DC conv
LD1
LD2
LD3
LD4
PI 1
PI 2
M1
M2
D1
D2
D9
D11
D12
D13
D14
Q3
Q4
Q5
Q13
Q14
Q15
R1
R18
R19
R26
R27
R31
R32
R34
R36
R38
R39
R40
C1
C2
C15
C16
C21
C34
C35
VDD1
VDD2
VCC1
VCC2
VDDO
VL1
IC6
IC1
IC4
ℓ 35
ℓ 36
ℓ 4
ℓ 5
ℓ 6
ℓ 7
ℓ 11
ℓ 12
ℓ 22
ℓ 23
ℓ 24
ℓ 27, 45
ℓ 28
ℓ 29
ℓ 42
ℓ 46
ℓ 47
LD6
Sw.ALL
Sw.40C
Sw.M
Sw.Bz
Sw.38
Sw.37
Sw.35
Sw.36
Sw.31
Sw.32
Sw.34
Sw.33
(White)
(Red)
(Black)

CHECK LIST

1. This check list shows the allowable quality level for servicing so as to warrant product quality to the users of Minolta cameras. Each item is detailed so that you can use this check list to meet the user's requirements. Also, use this to recheck the the repaired camera before returning it to the user.
2. When delivery or acceptance inspections are required, however, do not directly apply this check list to check the result of actual measurement, but follow the acceptance check list (manual) involved after grasp the meaning of inspection purpose correctly.
3. Because of user's taste or special purposes, they may sometimes require standards other than this. In that case, check if it is possible to meet the user's request, and perform the necessary adjustment.

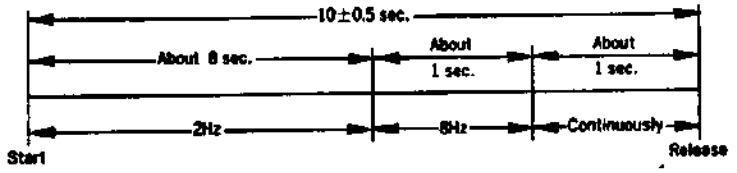
Check under the following conditions :
with standard lens (2550-100), main switch ON or ◉)) , exclusive flash 2800AF (8821) used.

<table>
<tr><th>Item</th><th>Checking part</th><th>Description</th></tr>
<tr><td>Initial (stand-by) setting</td><td>LCD indication</td><td>By attaching battery grip, LCD should show the following initial (stand-by) setting regardless of previous setting.
<table>
<tr><td>Exposure mode</td><td>PROGRAM</td></tr>
<tr><td>Drive mode</td><td>S</td></tr>
<tr><td>Exposure adjustment</td><td>No indication</td></tr>
<tr><td>Program shift</td><td>No indication</td></tr>
</table></td></tr>
<tr><td rowspan="5">Power ON/ hold</td><td rowspan="2">Main switch</td><td>Operation···Should be free from squeak, roughness. Should have proper click feeling</td></tr>
<tr><td>● Metering and indication circuits should be activated and measurement should be displayed by depressing each switch (mode key, AE lock button).
● Metering and indication circuits should be operated by depressing each switch*.
(Measurement should be displayed by releasing each switch*.)
※+/− key, ISO key, drive key.</td></tr>
<tr><td>Touch switch</td><td>Metering, indication, and manual focus circuits should be activated, and measurement should be displayed, by touching operating button.</td></tr>
<tr><td>Metering switch</td><td>Metering, indication, and AF circuit should be activated by depressing button to click stop.</td></tr>
<tr><td></td><td>● Power-ON should be held for 10 sec after each switch* is turned OFF.
● During metering activation, depress switch*, S-up/-down key, or A-up/-down key: In each case, power-ON should be held for 10 sec after the switch ON.
※Except main switch : mode key, AE lock button, +/− key, ISO key, drive key, touch switch, metering switch.
● After APO (auto power off) circuit activation with exclusive flash used, flash should be re-charged by metering switch (Sw. 0 or Sw. 1) ON.</td></tr>
<tr><td>Exposure mode setting</td><td>LCD indication</td><td>While depressing mode key, depress S-up/-down key : the mode should change respectively as follows :
PROGRAM → A → M → S → PROGRAM
PROGRAM ← A ← M ← S ← PROGRAM
(Each time key is depressed, mode should change one by one ; When key is held down, mode should change continuously.)</td></tr>
</table>

Note···In this Check List, aperture key and shutter speed key are called A-key, S-key respectively for convenience.

Item	Checking part	Description
Indication in P mode	LCD indication	● Each time S-up/-down key, A-up/-down key is depressed, indications of shutter speed and aperture should be changed by 0.5EV respectively. (When the key is held down, indication should change continuously.) ● During program shift, "PROGRAM" in body LCD and "P" in viewfinder LCD should blink. ● Program shift should be canceled after power 10-sec holding.
Inidication in A mode	LCD indication	● Each time A-up/-down key or S-up/-down key is depressed, aperture indication should change by 0.5EV, and shutter speed indication should change correspondingly. (When the key is held down, indication should change continuously.) ● When needed shutter speed is outside the coupled range, shutter speed indication ("30" or "1/2000") should blink. ● "◀" (setting signal) should be displayed next to aperture setting in body LCD.
Indication in S mode	LCD indication	● "◀" (setting signal) should be displayed next to shutter speed setting in body LCD. ● Each time S-up/-down key or A-up/-down key is depressed, shutter speed indication should change by 1EV, and aperture indication should change correspondingly. (When the key is held down, indication should change continuously.) ● When needed aperture is outside the coupled range, aperture indication (maximum or minimum aperture) should blink.
Indication in M mode	LCD indication	● "◀" (setting signal) should be displayed next to shutter speed and aperture settings in body LCD. ● Each time S-up/-down key is depressed, shutter speed indication should change by 1EV. (When the key is held down, indication should change continuously.) ● Each time A-up/-down key is depressed, aperture indication should change by 0.5EV. (When the key is held down, indication should change continuously.) ● Metered manual pointers (▲, ◆, ▼) should be displayed in viewfinder.
Metering out-of-range warning	LCD indication	When light level is outside the metering range, viewfinder LCD "▼▲" should blink (in P, A, S, M modes).

Item	Checking part	Description
ISO setting	LCD indication	● While depressing ISO key, depress S-up/-down key : Each time the key is depressed, ISO setting should change respectively to higher/lower film speed by 1/3 stop. (When key is held down, the setting should change continuously.) ● With DX-coded film loaded ; "ISO" should be set automatically when closing back cover. ● With non DX-coded film loaded : Previous ISO setting should be displayed when closing back cover.
Drive mode setting	LCD indication	● While depressing drive key, depress S-up/-down key ; Each time the key is depressed, the drive mode indication should change as follows : (When the key is held down, the indication should change continuously.) ● While drive key is held down, body LCD should display only frame number and drive mode. (Viewfinder LCD OFF)
Exposure adjustment	LCD indication	● While depressing +/− key, depress S-up/-down key : With each depress, exposure adjustment indication should change by 0.5EV up to +4EV/down to −4EV respectively. (With the key held down, the indication should change continuously.) ● When exposure adjustment is set except at "0", setting exposure-adjustment value and reminder "⊞" or "⊟" should be displayed.
AE lock	LCD indication	● Press and hold AE lock button (in P, A, S modes): The measurement (when AE is locked) should be held. ● Start self-timer with AE locked (in P, A, S modes): The measurement when AE is locked, should be held until shutter-release, even if AE is unlocked.
Program reset	LCD indication	Any setting should be reset to the following initial (stand-by) setting, by depressing program reset key : Exposure mode : PROGRAM Drive mode : $\overline{S}$ Exposure adjustment : No indication Program shift : No indication
Shutter operation	Operating button	Should be free from catching, roughness, squeak, looseness. Should have proper click feeling.
	Shutter blade	Should be free from stain, uneven surface. Shutter opening/closing should be smooth and complete*. ※Check opening in slow shutter speed (1/60 or slower) setting. 1st and 2nd shutter blades should not be in sight while shutter opens. 2nd shutter-blade should not hit 1st shutter-blade.
		Single drive mode($\overline{S}$) ● Shutter should not release continuously even with operating button held down. ● In AF mode, shutter should release only when focus-in (green LED ON in viewfinder).
		Continuous drive mode ($\overline{C}$) ● Shutter should release continuously. ● In AF mode, shutter should release only when focus-in.

Item	Checking part	Description
Shutter operation	Shutter blade	Self-timer mode (S.T.) ● By depressing operating button, body LCD frame counter should change to countdown timer, displaying 10″ (10 sec). At the same time self-timer should start, indicating countdown time in LCD (10″→9″→8″→), and then shutter should release with 10-sec delay.
		● With self-timer start, self-timer LED should blink in the following cycle: With main switch ●)) , camera should been simultaneously.  ● Self-timer activation should be canceled by depressing each switch*., and should be start from 10″ by re-pressing operationg button. ※mode key, drive key, +/− key, ISO key. ● Self-timer activation and S.T. mode should be canceled by depressing program reset key during the activation.
		Bulb ● By depressing operating button, "bulb" elapsed time (0″→1″→2″→), should be displayed in body LCD instead of frame counter indication.
Winding		Should be free from irregular sound, uneven operation.
	Take-up drum	Friction (Film should be taken up smoothly, without looseness)
	SLS roller	Should rotate without friction, catching.
	Sprocket	Sprocket teeth position is not specified.
		● By closing back cover with film in, film should wind up 4 times and stop with winding completion, frame number "1". ("0" without film in). ● With each shutter-release completion, film should advance one by one frame. ● At end of roll, winding should stop automatically, and camera should beep for 1 sec, with main switch in ●)) position, by detecting film end.
Rewinding	Rewind lever	● Should not be set unless rewinding release button is depressed. ● Should be smooth operation, without catching, roughness.
		● Should be free from irregular sound, uneveness. ● At the end of rewinding, film should be completely taken into cartridge. (Under abnormal conditions*, however, film leader may be left out.) ※minimum voltage of battery + lower temperatures. ● With rewinding completion, frame counter should indicate "0".

Item	Description

Exposure (manual)

Manual shutter speed ※Check by measuring 5 times.

Setting speed	Reference speed	Tolerance	Dispersion* (B range)	Exposure uneveness
1/2000	0.488ms	0.333–0.714ms	Within 0.45EV ($^{+37}_{-27\%}$)	The difference between maximum and minimum values among A, B, C range should be less than 0.6EV ($^{+52}_{-34\%}$). The difference between A-B, B-C ranges should be less than 0.3EV ($^{+23}_{-19\%}$).
1/1000	0.977ms	0.740–1.29ms	Within 0.3EV ($^{+23}_{-19\%}$)	
1/500	1.95 ms	1.58–2.4ms		
1/250	3.91 ms	3.18–4.18ms		
1/125	7.81 ms	6.34–9.62ms		
1/60	15.6 ms	12.7–19.2ms		
1/30	31.3 ms	29.2–33.5ms	——	
1/15	62.5 ms	58.3–67ms		
1/8	125 ms	117–134ms		
1/4	250 ms	233–268ms		
1/2	500 ms	467–536ms		
1"	1 s	933–1070ms		
2"	2 s	1.87–2.14s		
4"	4 s	3.74–4.28s		
8"	8 s	7.48–8.56s		
15"	16 s	14.93–17.2s		
30"	32 s	29.9–34.3s		
1/100	10 s	9.0–12.3ms		

Synchro (X delay time)

Shutter speed	Measuring range	Tolerance
1/100	A range	0.3ms (min.)
	B range	3.0ms (min.)

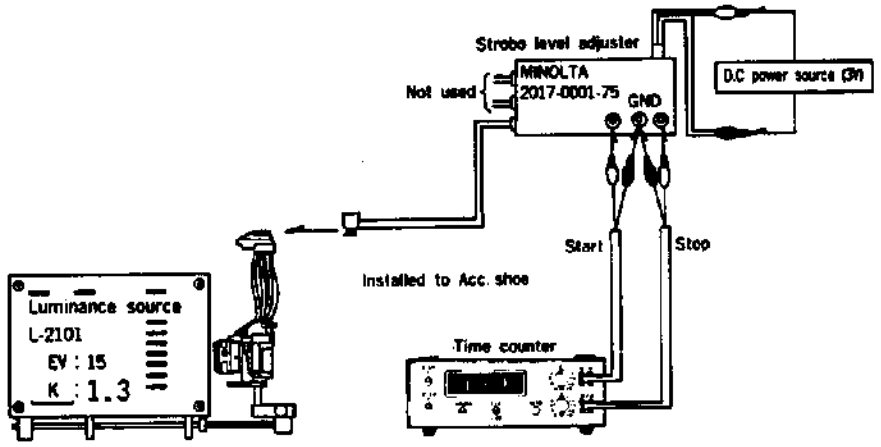
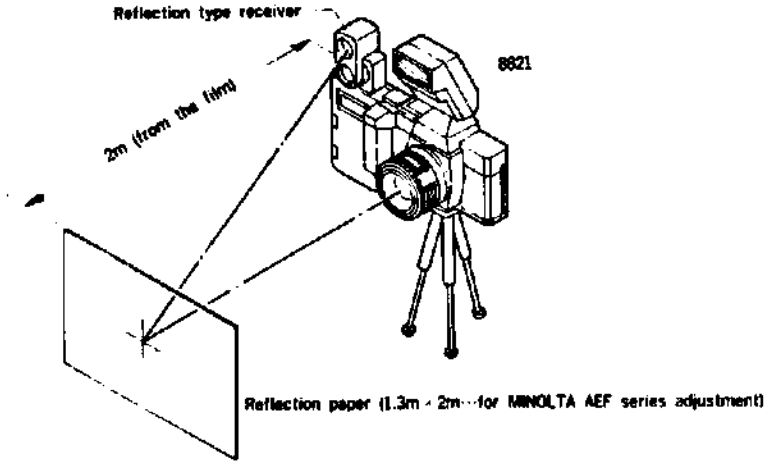
Exposure (auto)

AE level, shutter speed

With standard lens (2550-100), ISO : 100, K value : 1.3

Mode	Luminance*	Setting speed	Setting aperture*	AE level tolerance
PROGRAM	EV 6 (5)	——	——	0±0.8EV
	EV 10 (11)	——	——	
	EV 15	——	——	
A	EV 6 (5)	——	F5.6 (4)	0±0.8EV
	EV 10 (11)	——	F5.6 (8)	
	EV 15	——	F5.6	
S	EV 10 (11)	1/30	——	0±0.8EV
		1/250	——	

※Luminance and aperture given in ( ) are for luminance source, MODEL L-222 or L-223.

Item	Description
	Electric flash dimmer performance 1. Check by a luminance box (When the luminance source is other than L-2101, check in the following No. 2 methods.) ● **Standard**···The time counter display shall be within the range of **0.39 to 0.51ms**. ● **Checking procedures**···Set up a camera and measuring instruments as illustrated below to observe the time counter display when the shutter is released.  ● Camera Installation master lens (2072-0001-75) ※Film : Loaded Mode : A ISO : 100 ● Time counter (TC-1) TRIG. slope A-CH : - B-CH : + TRIG. level A-CH : +1 B-CH : +1 2. Checking by strobo tester (Model ST-Ⅲ) ● **Standard**···Strobo tester display shall be within the range of **F5.6±0.8EV**. ● **Checking procedures**···Set up a camera and measuring instruments as illustrated below and release the shutter 30 seconds after the pilot lamp of the electric flash light up to observe the display of the electric flash.  ● Camera Installation master lens (2072-0001-75) ※Film : Loaded Mode : A ISO : 100 ● Strobo tester MODE : NON. C ● Electric flash Hi-Low changing SW : Hi ※Use Kodacolor VR (ISO100) which has been exposed to light (indoor) at least one day.

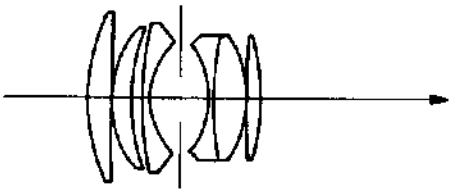
<table>
<tr><th>Item</th><th>Checking part</th><th>Description</th></tr>
<tr><td>Slow shutter speed warning</td><td></td><td>Under the following conditions with main switch ◖)) in P and A modes, camera should beep at 4Hz by turning touch switch ON.
<table>
<tr><th>Focal length of lens in use</th><th>Shutter speed indication</th></tr>
<tr><td>Shorter than 35mm</td><td>1/20 sec or slower</td></tr>
<tr><td>35↔105mm</td><td>1/45 sec or slower</td></tr>
<tr><td>Longer than 105mm</td><td>1/100 sec or slower</td></tr>
</table></td></tr>
<tr><td>Lighting for view finder indication</td><td></td><td>Cover the lens by hand while metering: LED (for viewfinder lighting) should be turned ON (if OFF) automatically regardless of camera setting.</td></tr>
<tr><td rowspan="3">Autofocus</td><td>Focus mode switch</td><td>● Should be free from roughness, squeak. Should have proper click feeling.
● In AF mode, AF circuit should be activated by turning metering switch ON.
● In manual focus mode, focus-assist should be activated by turning touch switch ON.</td></tr>
<tr><td rowspan="2"></td><td>AF operation
● With subject impossible to autofocus (too dark);
lens should shift and stop at infinity (∞).
Focus signal in viewfinder "▶◀" should blink with shutter release locked.
● With subject impossible to autofocus (low contrast);
lens should shift and stop (stop position is not regulated).
Focus signal in viewfinder "▶◀" should blink with shutter release locked.
● With subject possible to autofocus, AF should be activated, and green LED in viewfinder should glow showing focus-in.
When in-focus with main switch in ◖)) position, camera should beep at 16Hz.
When green focus signal in viewfinder glows, check if image in viewfinder is clear with far and near subjects.
● If subject (possible to autofocus) is closer than minimum distance, lens should stop at minimum distance with shutter release locked. Viewfinder LED "▶" should glow.
● Re-focusing after focus-in should be performed only after metering switch OFF.
● Focus signals in viewfinder should be turned OFF by metering switch OFF.</td></tr>
<tr><td>Manual focus operation
● With subject impossible to focus-assist, focus signal in viewfinder "▶◀" should blink.
● With subject possible to focus-assist;
when in focus, green LED in viewfinder should glow showing in-focus.
When out of focus "▶" or "◀" should glow.
● When in focus with main switch ◖)) , camera should beep at 16Hz.
● Focus-assist activation should hold for 10 sec after touch switch OFF.</td></tr>
<tr><td>Film advance speed
Rewind speed</td><td></td><td>Check with film (Kodacolor VR 100 24EXP.) loaded, power supply adaptor (at 6V, more than 2A) used.
● Film advance speed
Measure with shutter speed at 1/125 sec. for 10 sec from frame counter "5", in C drive mode, manual focus mode.
Frame counter should indicate "23" or more (1.8frame/sec or more).
● Rewind speed
Should be within 25 sec (from auto film stop to auto rewind stop...motor stop).</td></tr>
</table>

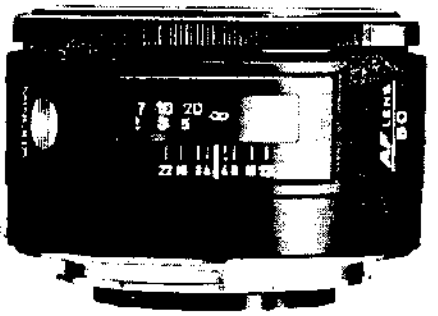
<table>
<tr><th>Item</th><th>Checking part</th><th>Description</th></tr>
<tr><td>B.C. voltage</td><td></td><td>
<table>
<tr><th>Item</th><th>Standard</th></tr>
<tr><td>LCD starts blinking</td><td>2.2±0.1V</td></tr>
<tr><td>Release lock, LCD off</td><td>2.0±0.1V</td></tr>
</table>
</td></tr>
<tr><td>Battery consumption</td><td></td><td>
<table>
<tr><th>Item</th><th>Standard</th></tr>
<tr><td>Metering</td><td>150mA (max.)</td></tr>
<tr><td>AF activation</td><td>1.2A (max.)</td></tr>
<tr><td>Winding (with film in)</td><td>2.2A (max.)</td></tr>
<tr><td>Rewinding</td><td>2.2A (max.)</td></tr>
</table>
</td></tr>
<tr><td>Leak current</td><td></td><td>
<table>
<tr><th>Item</th><th>Standard</th></tr>
<tr><td>Main switch OFF</td><td>100μA (max.)</td></tr>
<tr><td>Main switch ON, ◂</td><td>200μA (max.)</td></tr>
</table>
</td></tr>
<tr><td rowspan="3">Focusing</td><td></td><td>Body back (pressure plate back)·····43.72±0.01mm</td></tr>
<tr><td>Mirror</td><td>Should be free from losseness, unsmooth operation, timing failure, bound during shutter opening.</td></tr>
<tr><td>Viewfinder</td><td>Image should be free from inclination, uneven clearness.
Image sharpenss at infinity (∞). (check with lens set at ∞)</td></tr>
<tr><td rowspan="4">Others</td><td>Lens de-/attaching</td><td>Should have proper torque. Un-/locking should be smooth.
Attached lens should be free from looseness.</td></tr>
<tr><td>AF coupler</td><td>Projecting amount should be $1.6^{+0.2}_{-0}$mm.
(Without lens in AF mode in the state of AF coupler projection, measure the length from flange to tip of AF coupler.)</td></tr>
<tr><td>Back cover</td><td>• Should open (lift) by itself when lock is released.
• De-/attaching, un-/locking, roller rotation, should be smooth.
• Should not rub body when opening/closing.</td></tr>
<tr><td>Preasure plate</td><td>Should be flat evenly ; should be free from deformation, foreign substance.</td></tr>
<tr><td>Operation with exclusive flash</td><td></td><td>With exclusive flash fully charged
• Viewfinder flash-signal ⚡ should blink (2Hz) by touch switch ON.
• After activation of flash APO (auto power off) circuit, flash should be re-charged by touch switch ON.
• After flash fire, viewfinder flash-signal ⚡ should blink (8Hz) for one sec if exposure is correct.
• Shutter and aperture indication should change as follows, corresponding to exposure mode.</td></tr>
</table>

<table>
<tr><th>Item</th><th>Checking part</th><th>Description</th></tr>
<tr><td>Operation with exclusive flash</td><td></td><td>(ISO : 100)
<table>
<tr><th>Mode</th><th>Shutter speed</th><th>Aperture</th></tr>
<tr><td>P, S</td><td>1/100 or 1/60 sec (corresponding to lighting conditions.)</td><td>Range from f/2.8 to f/8 corresponding to lighting conditions.</td></tr>
<tr><td>A</td><td>1/100 sec.</td><td>Remains the same.</td></tr>
<tr><td>M</td><td>1/100 if manually setting speed is 1/125-1/2000 sec; Remains the same if menually setting speed is "bulb"-1/100 sec.</td><td>Remains the same.</td></tr>
</table>
● Turn metering switch ON with flash's main switch in AF position, lens covered : AF-assist light should be emitted once.</td></tr>
<tr><td>Operation with PROGRAM BACK SUPER 70, PROGRAM BACK 70</td><td></td><td>Should control camera properly.</td></tr>
<tr><td>Operation with WIRESS CONTROLLER IR-1N, REMOTE CORD S/L</td><td></td><td>Should release shutter properly.</td></tr>
</table>

MINOLTA AF 50mm F1.7 (2550-100)
MINOLTA MAXXUM AF 50mm F1.7 (2550-600)

LENS





Construction : 6 elements in 5 groups

Type : Modified-Gauss type

Coating : Minolta Achromatic

Angle of view : 47°

Lens mount : Minolta A mount

Lens signal contact : 5 contacts

Diaphragm : Automatic preset diaphragm

f No. : Maximum···1.7
Minimum···22
Full-stop setting···7.5 stops

Diaphragm blade : 7 blades

FOCUSING

Focusing : AF, FA, M

Type : Double helicoid system

Minimum focusing distance : 0.45m

Distance scale :

1.5	1.7	2	2.5	3	4	5	7	10	20	∞	(ft)
0.45	0.5	0.55	0.6	0.7	0.8	1	1.2	1.5	2	3	5		(m)

Infrared correction index : Yes

Depth-of-field scale : 4 8 16 22

DIMENSIONS & WEIGHT

Dimensions : φ65.5 (max. diameter) × 38.5mm (max. length)

Weight : 195 g

Filter-thread diameter : φ49mm (P=0.75)

Lens hood : Built-in

ACCESSORIES

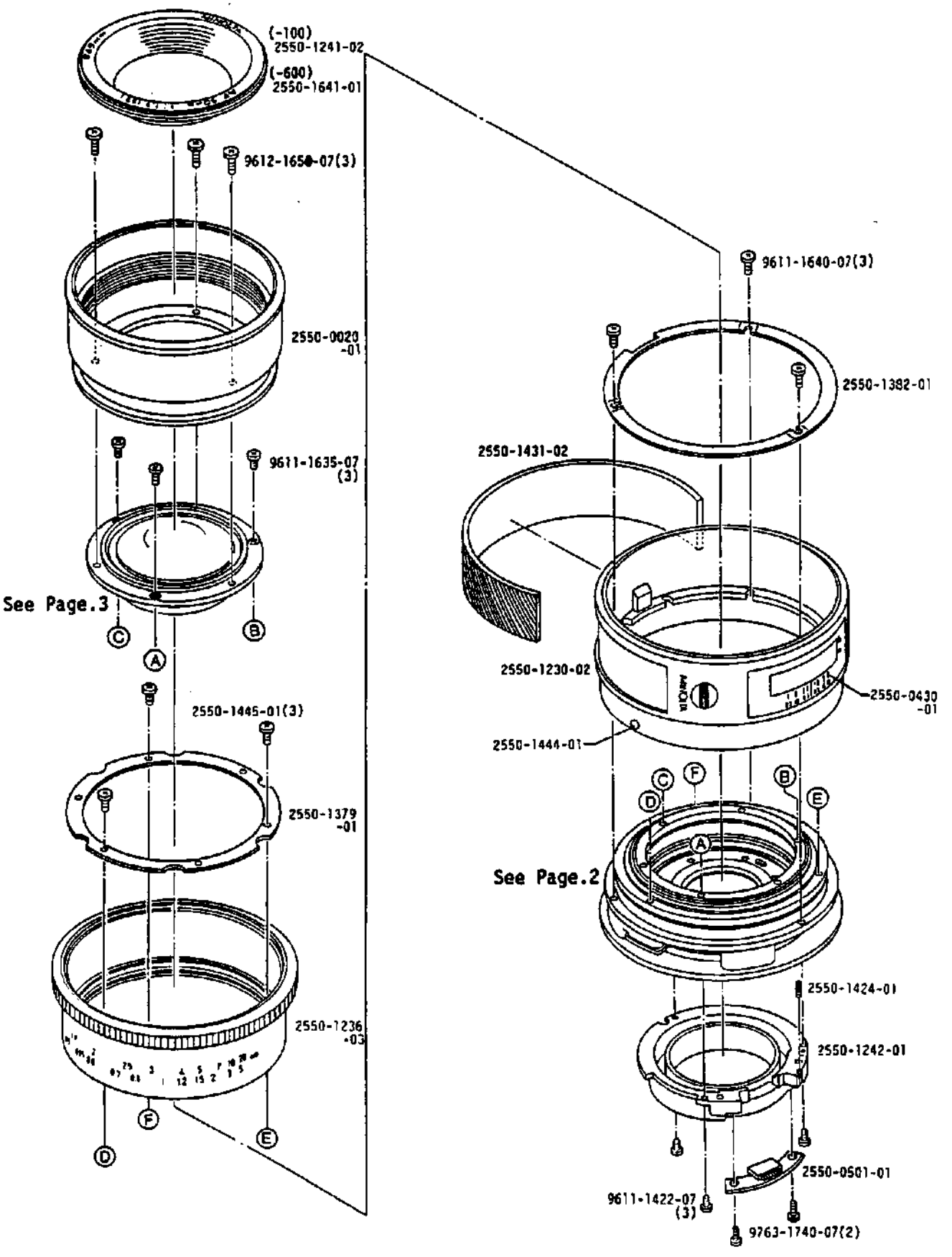
Lens case (LH-1011)

I N D E X

Part No.	Page
2550-0020	1
2550-0030	3
2550-0040	3
2550-0113	2
2550-0232	2
2550-0240	2
2550-0371	2
2550-0430	1
2550-0501	1
2550-1112	2
2550-1230	1
2550-1236	1
2550-1241	1
2550-1242	1
2550-1372	2
2550-1374	2
2550-1375	2
2550-1379	1
2550-1381	2
2550-1382	1
2550-1402	2
2550-1420	2
2550-1422	2
2550-1424	1
2550-1431	1
2550-1444	1
2550-1445	1,2
2550-1446	2
2513-1449	2
2550-1641	1
Screw	
9611-1422-07	1
9611-1625-07	2
9611-1635-07	1,2
9611-1640-07	1
9611-2040-04	2
9612-1655-07	1
9763-1740-07	1
Washer	
9793-1736-50	1

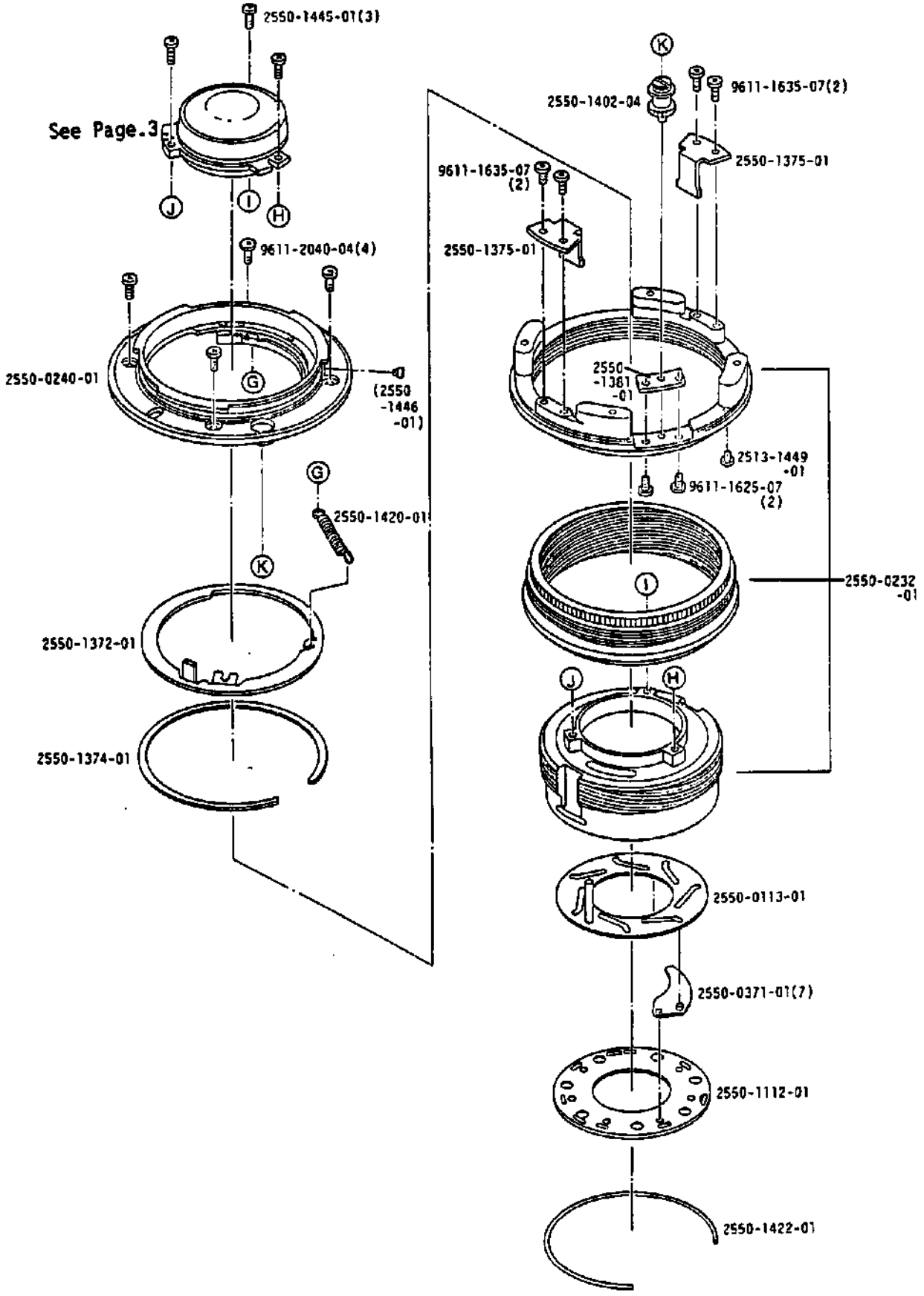
1

AF 50mm F1.7(22) Code No.2550-100
MAXXUM AF 50mm F1.7(22) Code No.2550-600

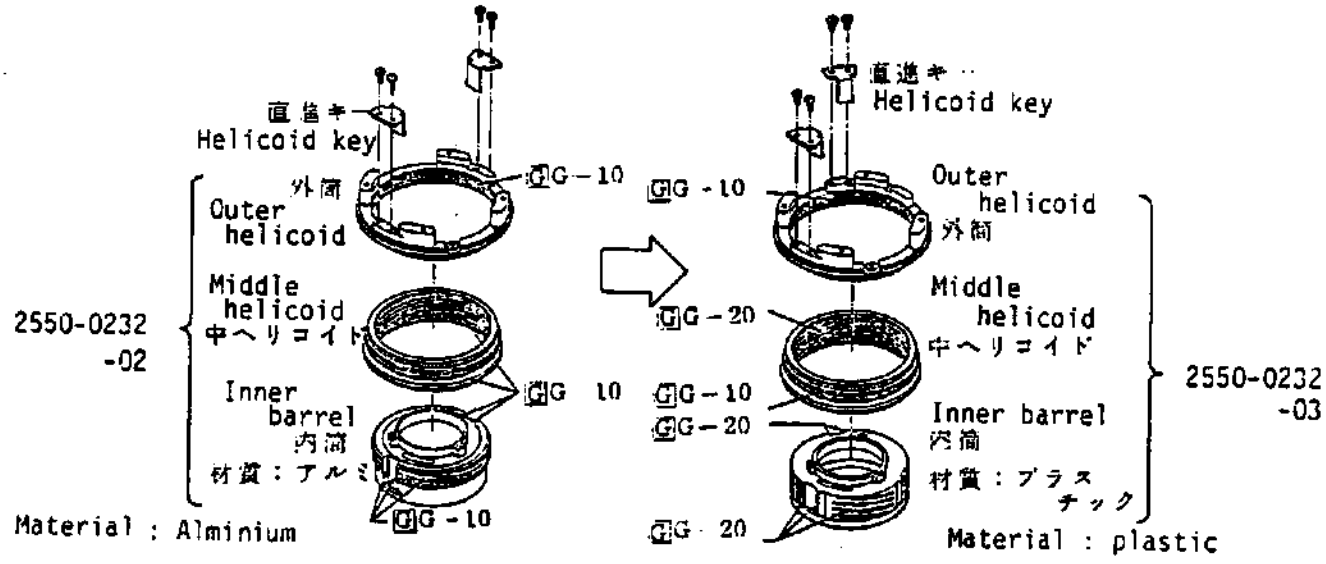


Part No.	Part Name		Qty.
2550-0020-01	Hood set	フードセット	1
2550-0430-01	Distance scale window set	距離表示窓セット	1
2550-0501-01	Lens contact board set	信号基板セット	1
2550-1230-02	Outer ring	固定保持環	1
2550-1236-03	Focusing ring	距離リング	1
2550-1241-02	Name plate (-100)	飾り環	1
2550-1242-01	Rear light shield ring	後遮光筒	1
2550-1379-01	Focusing ring set plate	距離リング締付板	1
2550-1382-01	Outer ring set plate	固定保持環締付板	1
2550-1424-01	Spring	アーススプリング	1
2550-1431-02	Leather	貼皮	1
2551-1444-01	Bayonet point	バヨネット標点	1
2550-1445-01	Screw	止めねじ	3
2550-1641-02	Name plate (-600)	飾り環	1
9611-1422-07	Phillips type screw	十字穴付なべ頭小ねじ	3
9611-1635-07 or **9761-1742-07**	Phillips type screw **Philips type screw for plastic Inner barrel**	十字穴付なべ頭小ねじ	3 3
9611-1640-07	Phillips type screw	十字穴付なべ頭小ねじ	3
9612-1650-07	Phillips type screw	十字穴付なべ頭小ねじ	3
9763-1740-07	Tap tite screw	十字穴付半丸頭タップタイトねじ	2

2 — AF 50mm F1.7(22) Code No.2550-100
MAXXUM AF 50mm F1.7(22) Code No.2550-600



Part No.	Part Name		Qty.
2550-0113-01	Diaphragm operation plate set	絞り操作板セット	1
2550-0232-02 2550-0232-03	Helicoid set	ヘリコイドセット	1
2550-0240-01	Bayonet mount set	バヨネットマウントセット	1
(2550-1446-01)	Screw	ストッパービス	1
2550-0371-01	Diaphragm blade set	絞り羽根セット	7
2550-1112-01	Diaphragm pressure ring	絞り押え環	1
2550-1372-01	Preset ring	プリセットリング	1
2550-1374-01	Preset ring pressure	プリセットリング押え	1
2550-1375-01	Helicoid key	直進キー	2
2550-1381-01	Axis receiver-B	軸受B	1
2550-1402-04	Coupler	カプラー	1
2550-1420-01	Main spring	メインスプリング	1
2550-1422-01	Diaphragm pressure ring spring	絞り押え環スプリング	1
(2550-1445-01 **2550-1447-01**	Screw **Screw for plastic Inner barrel**	止めねじ	3
2513-1449-01	Screw	止めねじ	1
9611-1625-07	Phillips type screw	十字穴付なべ頭小ねじ	2
9611-1635-07	Phillips type screw	十字穴付なべ頭小ねじ	4
9611-2040-04	Phillips type screw	十字穴付なべ頭小ねじ	4



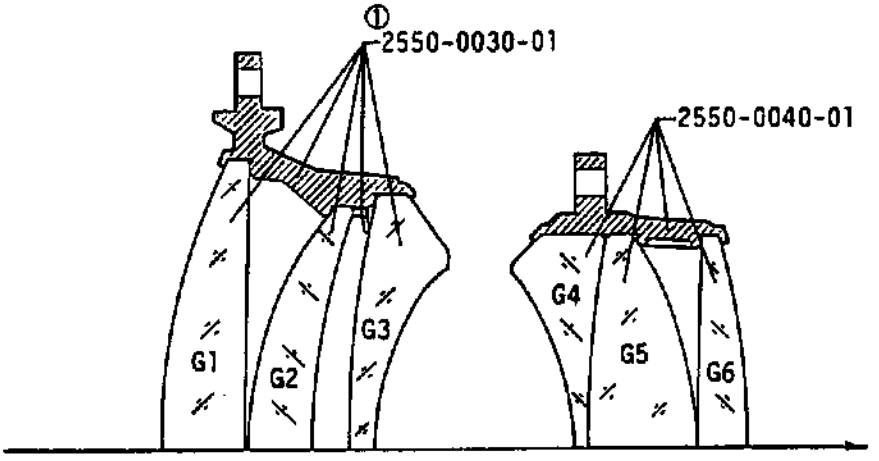
AF 50mm F1.7(22) Code No.2550-100
MAXXUM AF 50mm F1.7(22) Code No.2550-600

■ When repairing following parts, must be checked resolving power by projection.

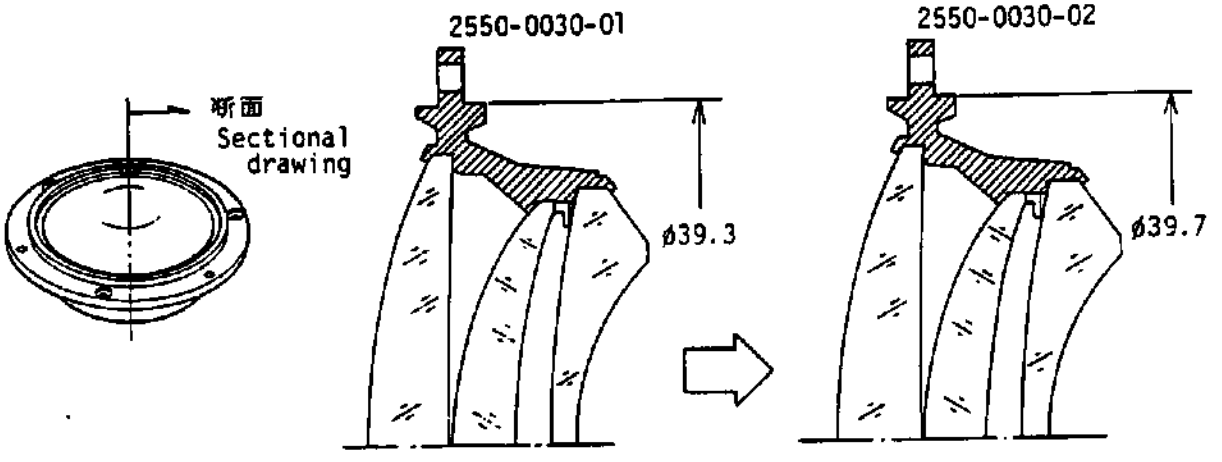
①: The influential lens element in the lens performance. (Number shows in order.)

■下記部品を修理した場合は、必ず投影解像力を確認して下さい。

①：レンズ性能によく影響するレンズ。（数字は順位を示す）



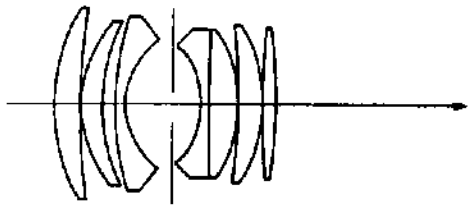
Part No.	Part Name		Qty.
2550-0030-01	Front lens group set	前玉群セット	1
2550-0040-01	Rear lens group set	後玉群セット	1

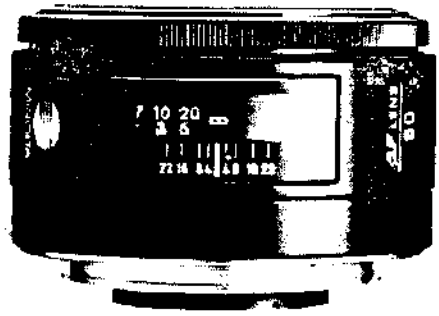


Related modification of 2550-0232 modification

MINOLTA AF 50mm F1.4 (2562-100)
MINOLTA MAXXUM AF 50mm F1.4 (2562-600)

LENS





Construction : 7 elements in 6 groups

Type : Modified-Gauss type

Coating : Minolta Achromatic

Angle of view : 47°

Lens mount : Minolta A mount

Lens signal contact : 5 contacts

Diaphragm : Automatic preset diaphragm

f No. : Maximum···1.4
Minimum···22
Full-stop setting···8 stops

Diaphragm blade : 7 blades

FOCUSING

Focusing : AF, FA, M

Type : Double helicoid system

Minimum focusing distance : 0.45 m

Distance scale :

1.5	1.7		2		2.5	3		4	5	7	10	20	(ft)
0.45	0.5	0.55	0.6	0.7	0.8	1	1.2	1.5	2	3	5	∞	(m)

Infrared correction index : Yes

Depth-of-field scale : 4 8 16 22

DIMENSIONS & WEIGHT

Dimensions : φ65.5 (max. diameter) × 38.5 mm (max. length)

Weight : 235 g

Filter-thread diameter : φ49 mm (P=0.75)

Lens hood : Built-in

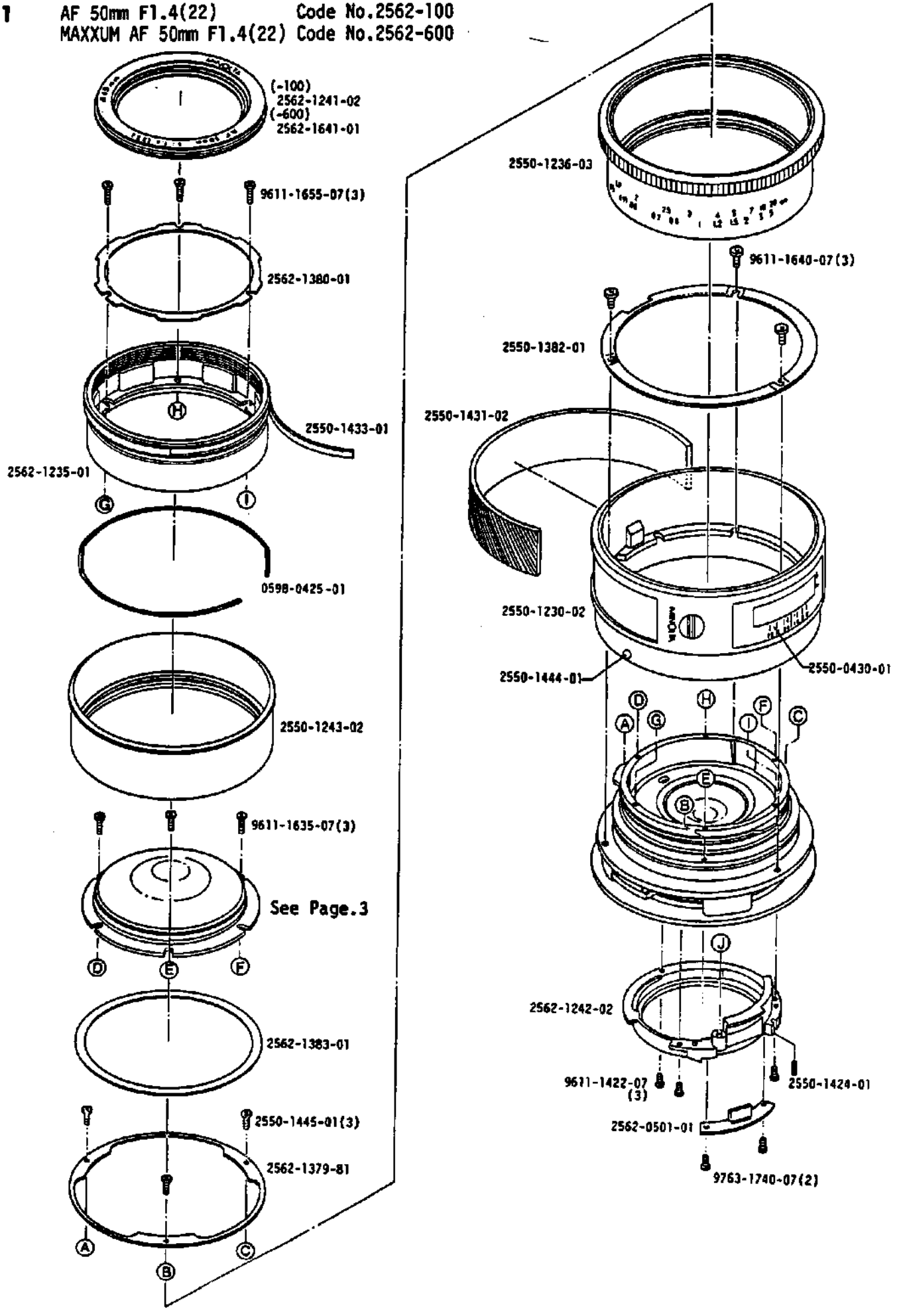
ACCESSORIES

Lens case (LH-1011)

I N D E X

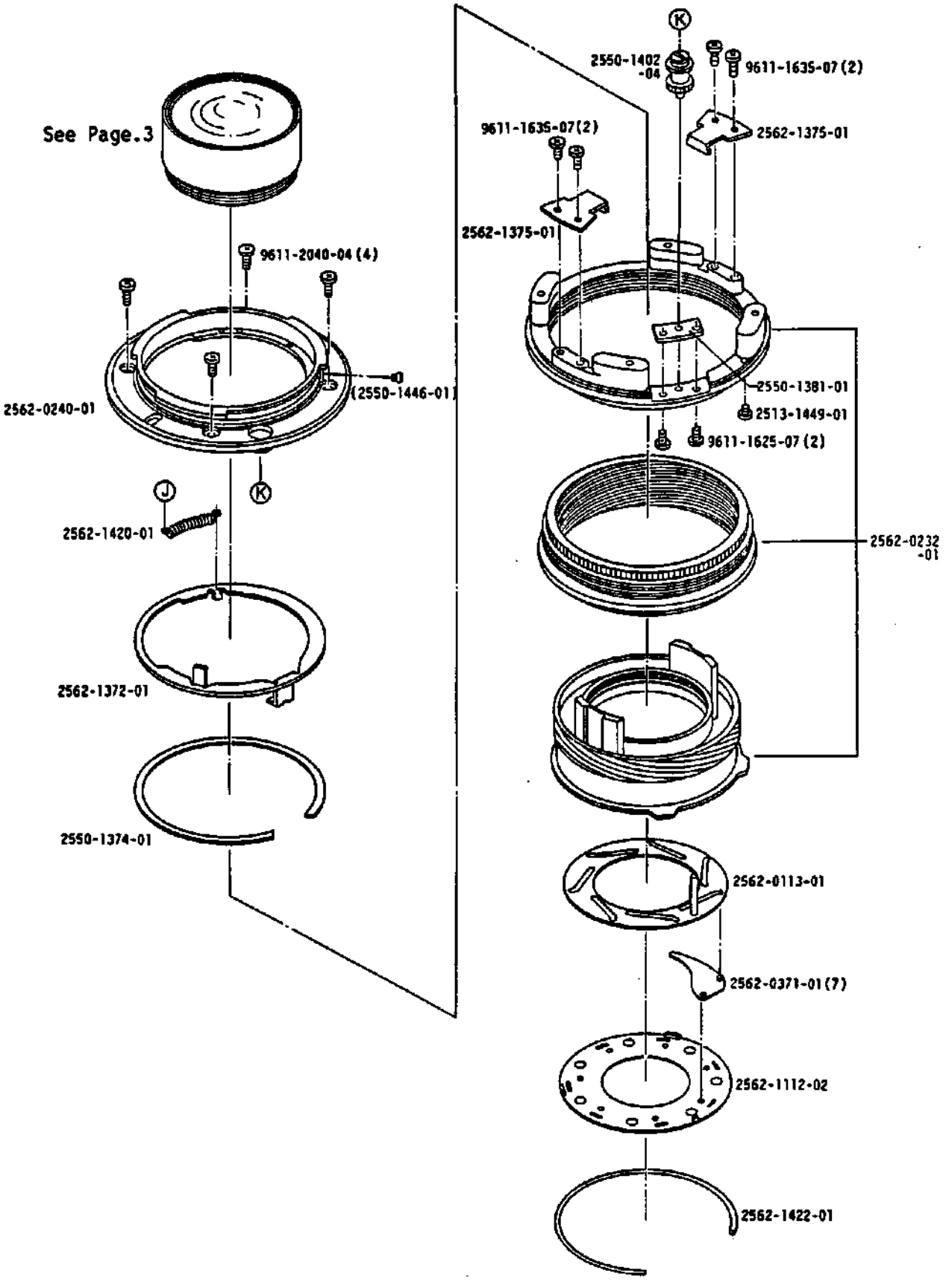
Part No.	Page	Part No.	Page	Part No.	Page
2562-0030	3	2550-1374	2		
2562-0113	2	2562-1375	2	2562-1641	1
2562-0232	2	2562-1379	1		
2562-0240	2	2562-1380	1	2562-1806	3
2562-0371	2	2550-1381	2	2562-1807	3
0598-0425	1	2550-1382	1		
2550-0430	1	2562-1383	1	2521-5105	3
2562-0501	1			2521-5104	3
2521-0503	3	2550-1402	2		
		2562-1420	2	Screw	
2562-1112	2	2562-1422	2	9611-1422-07	1
2550-1230	1	2550-1424	1	9611-1625-07	2
2562-1235	1	2550-1431	1	9611-1635-07	1,2
2550-1236	1	2550-1433	1	9611-1640-07	1
2562-1241	1	2550-1444	1	9611-1655-07	1
2562-1242	1	2550-1445	1	9611-2040-04	2
2550-1243	1	2550-1446	2		
2562-1372	2	2513-1449	2	9763-1740-07	1

1 AF 50mm F1.4(22) Code No.2562-100
MAXXUM AF 50mm F1.4(22) Code No.2562-600



Part No.	Part Name		Qty.
0598-0425-01	Hood friction spring set	フード摩擦スプリングセット	1
2550-0430-01	Distance scale window set	距離表示窓セット	1
2562-0501-01	Lens contact board set	信号基板セット	1
2550-1230-02	Outer ring	固定保持環	1
2562-1235-01	Filter ring	鏡頭環	1
2550-1236-03	Focusing ring	距離リング	1
2562-1241-02	Name ring (-100)	飾り環	1
2562-1242-02	Rear light shield ring	後遮光筒	1
2550-1243-02	Hood	フード	1
2562-1379-02	Focusing ring set plate	距離リング締付板	1
2562-1380-01	Filter ring set plate	鏡頭環締付板	1
2550-1382-01	Outer ring set plate	固定保持環締付板	1
2562-1383-01	Hood stopper ring	フード当りリング	1
2550-1424-01	Spring	アーススプリング	1
2550-1431-02	Leather	貼皮	1
2550-1433-01	Friction cloth	摩擦布	1
2550-1444-01	Bayonet point	バヨネット標点	1
2550-1445-01	Screw	止めねじ	3
2562-1641-02	Name ring (-600)	飾り環	1
9611-1422-07	Phillips type screw	十字穴付なべ頭小ねじ	3
9611-1635-07	Phillips type screw	十字穴付なべ頭小ねじ	3
9611-1640-07	Phillips type screw	十字穴付なべ頭小ねじ	3
9611-1655-07	Phillips type screw	十字穴付なべ頭小ねじ	3
9763-1740-07	Tap tite screw	十字穴付半丸頭タップタイトねじ	2

AF 50mm F1.4(22) Code No.2562-100
MAXXUM AF 50mm F1.4(22) Code No.2562-600



Part No.	Part Name		Qty.
2562-0113-01	Diaphragm operation plate set	絞り操作板セット	1
2562-0232-02	Helicoid set	ヘリコイドセット	1
2562-0240-01	Bayonet mount set	バヨネットマウントセット	1
(2550-1446-01)	Screw	ストッパービス	1
2562-0371-01	Diaphragm blade set	絞り羽根セット	7
2562-1112-02	Diaphragm pressure ring	絞り押え環	1
2562-1372-01	Preset ring	プリセットリング	1
2550-1374-01	Preset ring pressure	プリセットリング押え	1
2562-1375-01	Helicoid key	直進キー	2
2550-1381-01	Axis receive - B	軸受B	1
2550-1402-04	Coupler	カプラー	1
2562-1420-01	Main spring	メインスプリング	1
2562-1422-01	Diaphragm pressure ring spring	絞り押え環スプリング	1
2513-1449-01	Screw **Discontinued**	止めねじ	1
9611-1625-07	Phillips type screw	十字穴付なべ頭小ねじ	2
9611-1635-07	Phillips type screw	十字穴付なべ頭小ねじ	4
9611-2040-04	Phillips type screw	十字穴付なべ頭小ねじ	4

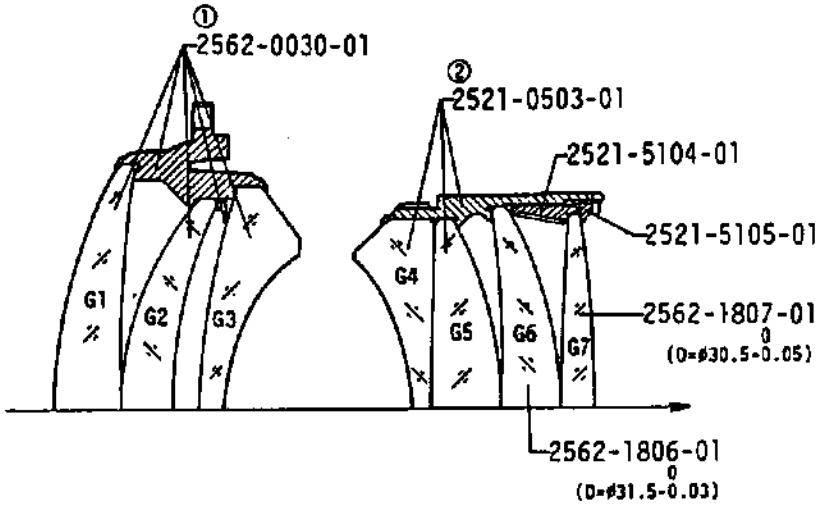
AF 50mm F1.4(22) Code No.2562-100
MAXXUM AF 50mm F1.4(22) Code No.2562-600

■ When repairing following parts, must be checked resolving power by projection.

①: The influential lens element in the lens performance. (Number shows in order.)

■下記部品を修理した場合は、必ず投影解像力を確認して下さい。

①：レンズ性能によく影響するレンズ。（数字は順位を示す）



Part No.	Part Name		Qty.
2562-0030-01	Front lens group set	前玉群セット	1
2521-0503-01	Rear lens barrel set	後玉枠セット	1
2562-1806-01	Lens - G6	レンズG6	1
2562-1807-01	Lens - G7	レンズG7	1
2521-5105-01	G7 pressure ring	G7押え	1
2521-5104-01	G6,7 spacer	G6,7間隔ワッシャー	1

AF ZOOM 35～70mm F4(22) Code No.2551-100
MAXXUM AF ZOOM 35～70mm F4(22) Code No.2551-600

■ When repairing following parts, must be checked resolving power by projection.

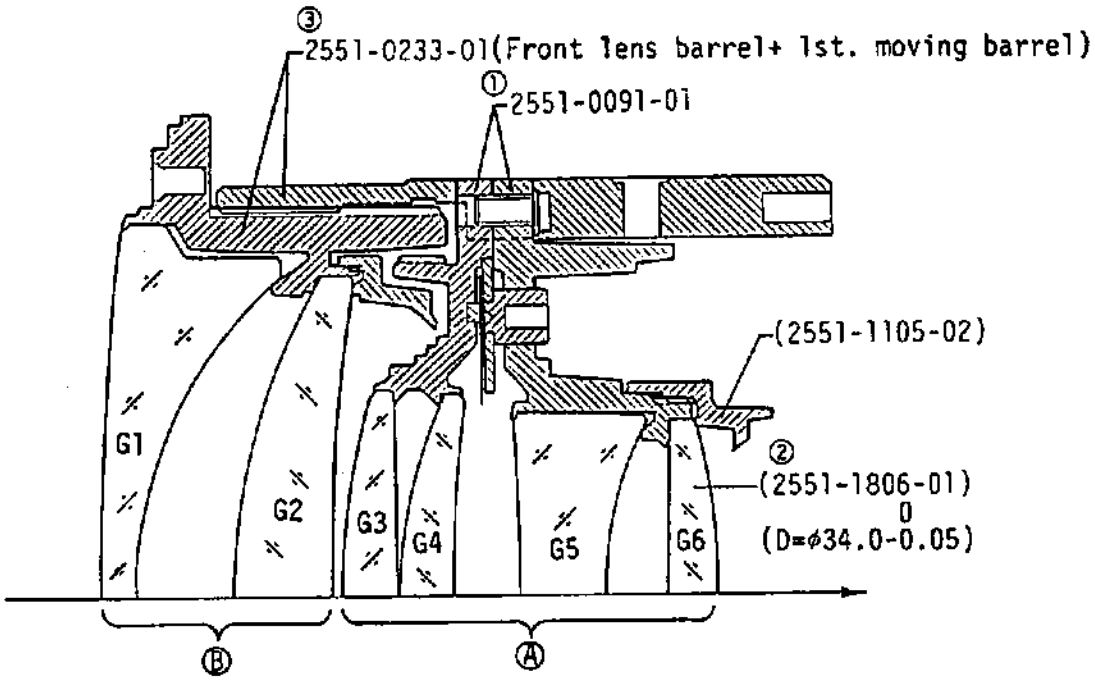
①: The influential lens element in the lens performance. (Number shows in order.)

Ⓐ: The influential lens group in the lens performance. (Influence: In alphabetical order)

■下記部品を修理した場合は、必ず投影解像力を確認して下さい。

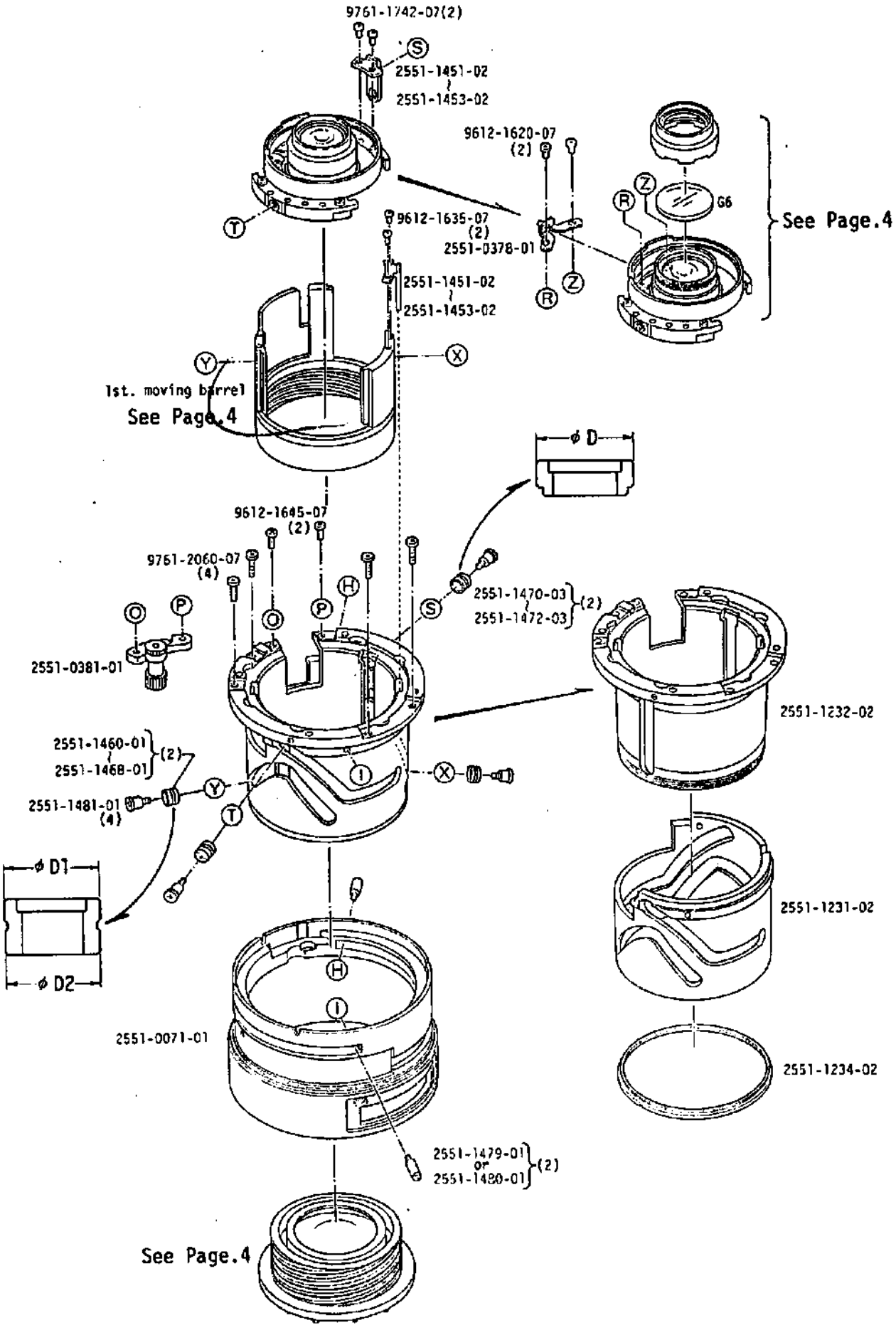
①：レンズ性能によく影響するレンズ。（数字は順位を示す）

Ⓐ：レンズ性能によく影響するレンズ群。（影響度：アルファベット順）

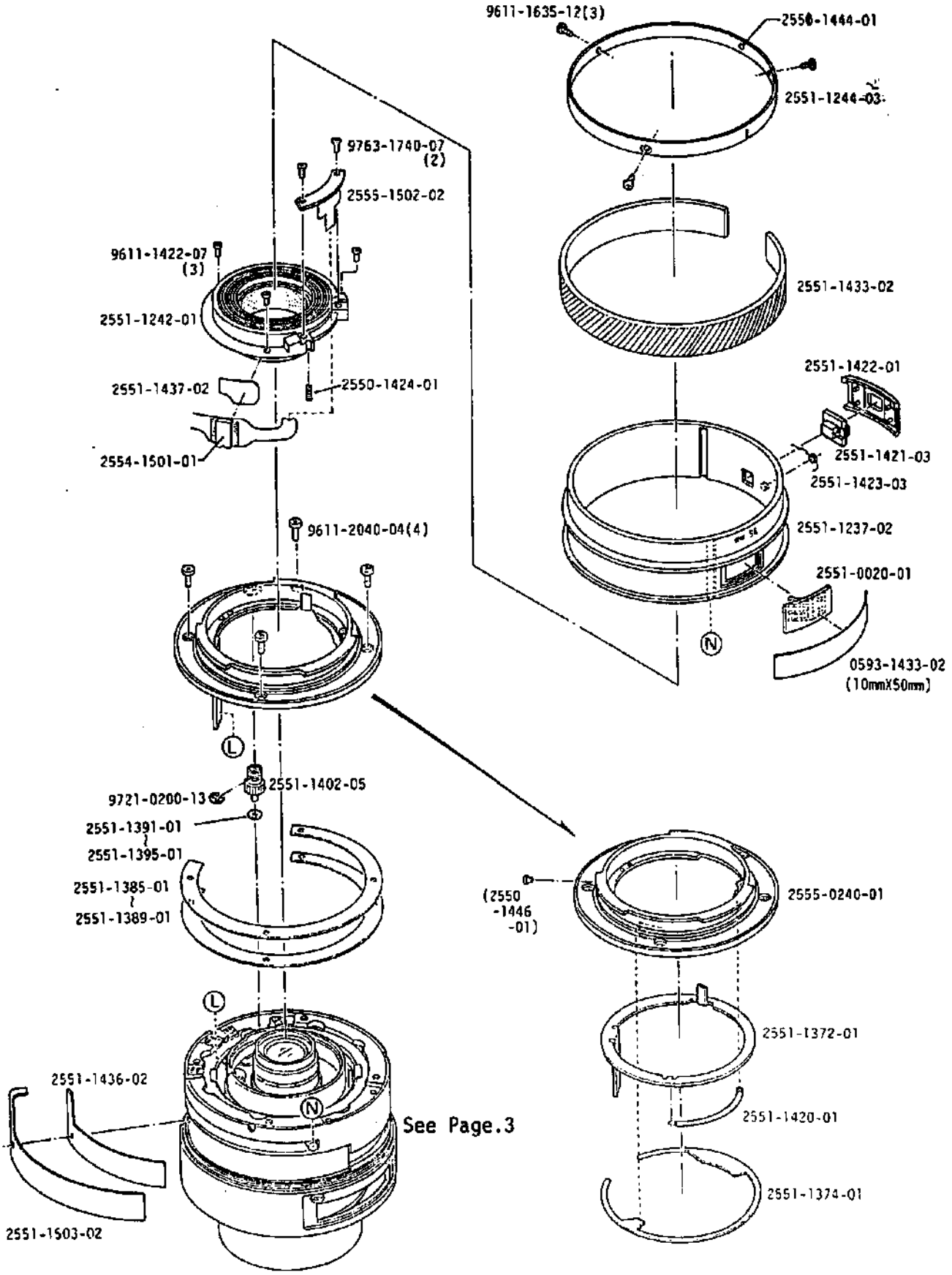


Part No.	Part Name		Qty.
2551-0091-01	Rear lens group set	後玉群セット	1
(2551-1105-02)	G6 pressure ring	G6押え	1
(2551-1806-01)	Lens-G6	レンズG6	1
2551-0233-01	Front lens group set	前玉群セット	1

AF ZOOM 35~70mm F4(22) Code No.2551-100
MAXXUM AF ZOOM 35~70mm F4(22) Code No.2551-600

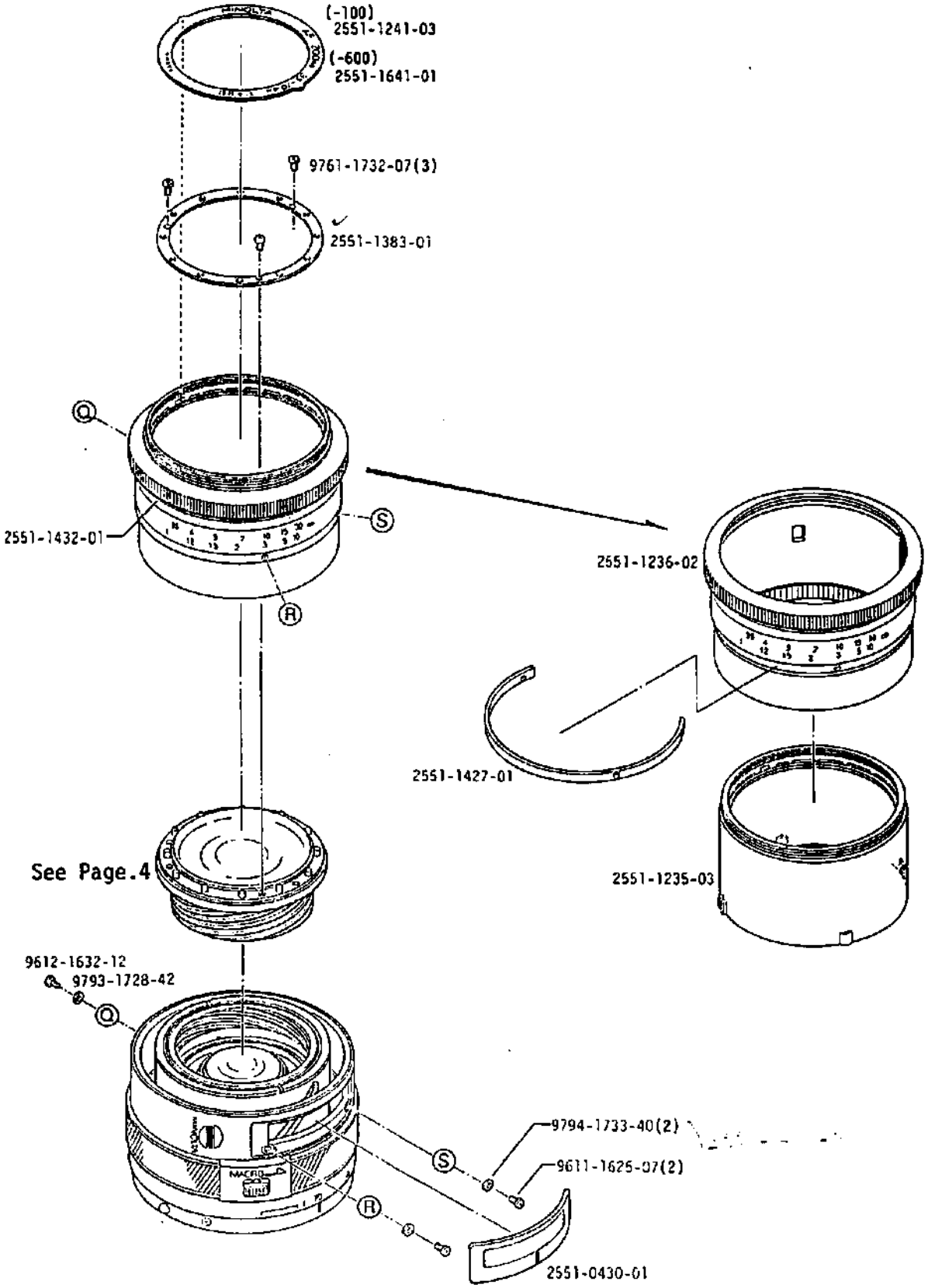


AF ZOOM 35～70mm F4(22) Code No.2551-100
MAXXUM AF ZOOM 35～70mm F4(22) Code No.2551-600



See Page.3

AF ZOOM 35~70mm F4(22) Code No.2551-100
MAXXUM AF ZOOM 35~70mm F4(22) Code No.2551-600



MINOLTA

February 27, 1987

T-098

Technical

SERVICE BULLETIN

Photographic Division

SUBJECT: Corrections to Service Manual Part Numbers-7000 (2072)

Please make the following corrections to you Minolta Maxxum 7000 Service Manual.

PARTS LIST

PAGE	INCORRECT NUMBER	CORRECT NUMBER
1	2072-1015-03	2072-1015-01
1	2072-1016-02	2072-1016-01
10	2072-9122-02	2072-9122-01
10	2072-9416-81	2072-9461-81
18	2072-0150-01	2071-0150-01

Minolta Corporation 101 Williams Drive, Ramsey, New Jersey 07446 (201) 825-4000

February 27, 1987

T-094

Technical

SERVICE BULLETIN

Photographic Division

SUBJECT: Rotation failure of motor - 7000 (2072)

SYMPTOM: Motor does not rotate smoothly. Camera shows one of the following symptoms:
* When releasing the shutter, camera shows stand-by display and shutter releases with no-slit.
* When winding, camera shows film-end display.
* Battery drains sharply.

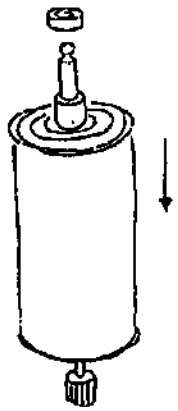
SERVICE MEASURE: CHECK THE MOTOR:

(I) 1. Remove the bottom cover. Push and hold the motor set to the bottom cover side.
2. Pick up motor gear set (2072-0248-01) with tweezers and check the motor axis for looseness. If the motor axis is not loose, the motor is defective.

(II) REPAIR THE MOTOR SET

1. Repair motor set (2072-0424-01) if defective.
2. Remove motor set.
3. With contact plate side up, strongly push motor set against desk (in direction of arrow as shown below) so that the metal guide will be in position. After placing the guide in position, make sure the rotation of motor axis has become easier than before.
4. Replace motor support collar (2072-9461-81) over the guide, and install motor set into the camera body.

* If the guide does not move back in position, or if the motor rotation is still unsmooth, replace the motor set (2072-0424-01).



Minolta Maxxum 7000
Service Manual
Winding-base Plate Set

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MINOLTA MAXXUM 7000

Similar models: 5000

Batteries: 4ea AAA-size (operating batteries), 1ea 3V built-in lithium battery (memory)

Note: Some models use larger battery holders with 4 AA-size batteries; the battery holders will interchange.

GENERAL:

The autofocus system in the Minolta Maxxum uses a CCD (charge-coupled device) to detect the focus. A CCD stores information by electrical charges. The circuit then applies signals to shift the focus information out of the CCD memory.

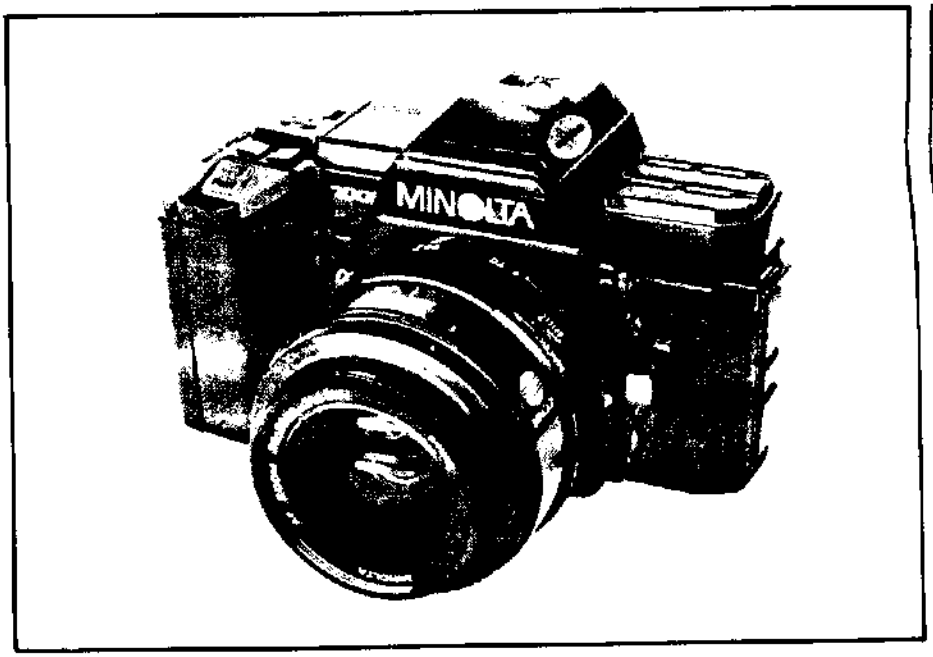
Part of the light passing through the lens also passes through a beamsplitter in the reflex mirror. A submirror located behind the reflex mirror reflects this light to the bottom of the mirror box — to the CCD. A pair of lenses in front of the CCD separate the light into two beams. These beams form charge pockets in the CCD. The positions of the charge pockets along the length of the CCD depend on the lens focus.

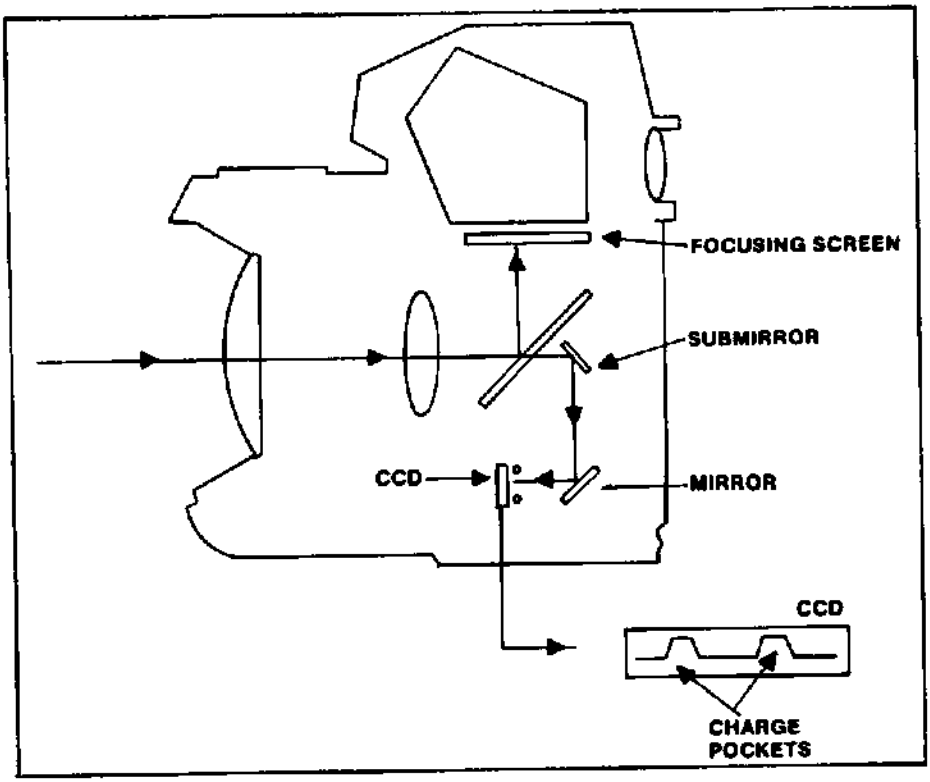
The positions of the charge pockets becomes a digital signal — the presence of a charge being a digital "1" and the absence of a charge being a digital "0." When you push the release button part way, the circuit shifts the digital signal out of the CCD memory. Now the circuit knows whether or not the subject is in focus — and, if the subject isn't in focus, the circuit knows which way (and how far) the lens must be moved.

A motor built into the camera drives the coupler at the front of the lens-mounting ring to focus the lens. The AF motor has four speeds. For a large focus correction, the AF motor starts at its top speed. The AF motor then slows down in stages as the lens nears the proper focus position.

Most repairs require only the normal test equipment. The exceptions are adjustments in the autofocus system. Minolta uses an I/O (input/output) tester, a special computer that measures circuit responses to different targets.

Minolta Maxxum 7000





Although you can check for focus errors, the I/O tester is needed for adjustments. Minolta doesn't supply the I/O tester (even if you could purchase the instrument, the cost would be prohibitive). Cameras requiring focus adjustments should therefore be sent to Minolta.

Fortunately, focus adjustments comprise a very small percentage of the normal repairs. The only special tool you need for other repairs is a spanner to turn the motor gear at the bottom of the camera. You can use just about any type of spanner that fits the motor-gear slots. Many

of the special tools designed by camera manufacturers for removing retainers will work. One that fits especially well is the focus-adjustment spanner for the Minolta XE finder (tool #081-9112-77). The tool for removing the SR-T self-timer-lever screw also fits the Maxxum motor gear.

No special tools are required for the fixed-focal-length lenses (covered in section 2 of this manual). However, the zoom lenses do require special gages for setting the zoom brushes. The position of the brush tells the camera circuit the focal-length setting. Except for minor repairs, zoom lenses for the Maxxum should also be sent to Minolta.

SECTION 1 — 7000 CAMERA BODY:

Fig. 1—top view

Fig. 2—top cover removed

Fig. 3—bottom cover removed

Fig. 4—front view, covers removed

Fig. 5—top view, wind side

Fig. 6—front view, wind side

Fig. 7—front view, rewind side

Fig. 8—top view, rewind side (early style flex)

Fig. 9 back view

Fig. 10—top rewind side, key base removed

Fig. 11—top wind side, body LCD removed

Fig. 12—top front view (early style)

Fig. 13—underside, in-finder holder

Fig. 14—top view, PCB-A removed

Fig. 15—underside, PCB-A (early style)

Fig. 16—top view, wind-gear unit removed

Fig. 17—wind-gear unit, bottom view

Fig. 18—wind-gear unit, upper base plate removed

Fig. 19—front view, mirror box removed

Fig. 20—shutter block, front view and wiring

Fig. 21—shutter block, back view

Fig. 22—mirror box, back view

Fig. 23—mirror box, back wind side

Fig. 24—front view, bayonet ring removed

Fig. 25—mirror box, aperture-control unit removed

Fig. 26—bottom view, DC/DC converter removed

Fig. 27—release-contact plate

Fig. 28—aperture-control unit

Fig. 29—test points and IC pin numbering, top of flex

Fig. 30—wiring pictorial, PCB-A (top)

Section 1 - 7000 Camera Body

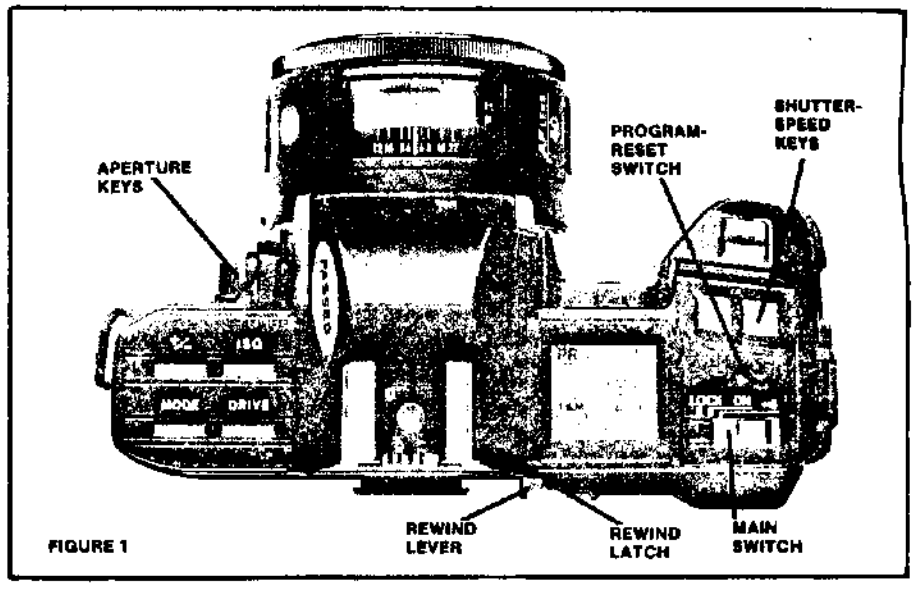


FIGURE 1

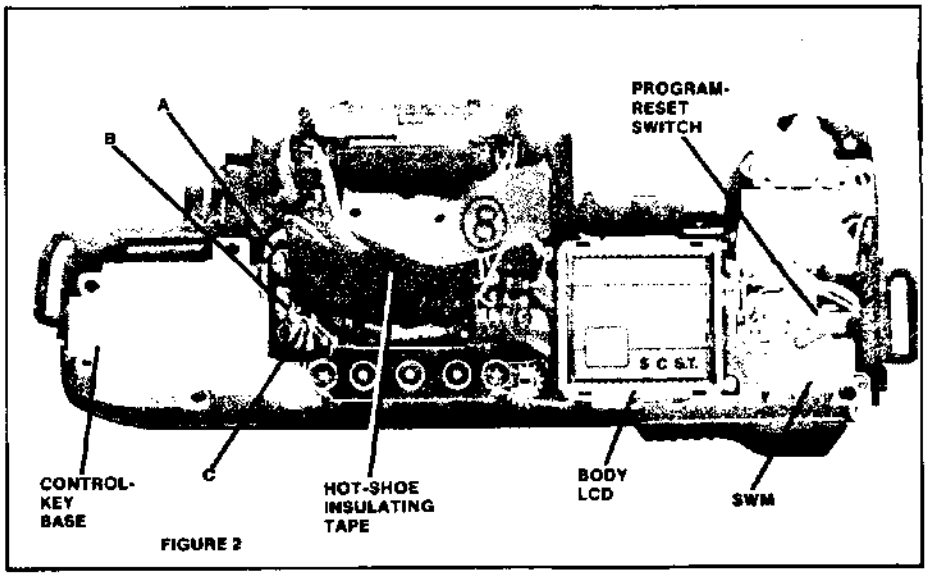


FIGURE 2

Fig. 31—wiring pictorial, PCB-B (front and bottom)

Fig. 32—wiring pictorial, PCB-C (top)

Fig. 33—schematic, PCB-C

Fig. 34—schematic, PCB-A and PCB-B

ADJUSTMENT LOCATIONS:

A/D conversion voltage	A
Auto exposure	B
TTL flash	C
EZ (auto focus accuracy)	D*
CCD position	E**
AF coupler	F
Finder LCD, alignment	G
Travel time, 1st curtain	H
Travel time, 2nd curtain	I
Mirror-up switch SW40	J

NOT SHOWN:
Mirror angle — inside mirror box, wind side; adjust by bending mirror-stop tab
Submirror angle — inside mirror box, rewind side

toward top (eccentric, accessible with shutter open from back); do not disturb (requires special I/O tester to adjust).

*If out of adjustment, the lens focus will not be correct (image out of focus even though green LED turns on); Minolta recommends that you do not attempt adjustment without special test equipment (I/O tester).

**Controls the AF selectivity by positioning the CCD; Minolta recommends that you do not attempt adjustment without special test equipment (I/O tester).

ADJUSTMENT AND TEST VALUES:

Curtain-travel time: 6ms (20mm distance), 7.2ms (24mm distance)
Flange-focal distance: 44.7 +/- 0.01mm (flange to film rails)

Note: Increase the distance by shimming the bayonet-mounting ring. To decrease the distance, Minolta supplies a special bayonet mount (2072-1010-81) that's 0.1mm thinner than the regular bayonet mount.

A/D conversion voltage: 1152 +/- 5mv (for normal room temperature of 25 +/- 5 C). Measure between the points shown in Fig. 29, SW1 closed. Adjust with A, Fig. 2.

Note: For other room temperatures, refer to the following:
20 +/- 2.5 C - 1133 +/- 5mv
30 +/- 2.5 C - 1171 +/- 5mv
AF coupler: extends 1.6 +0.2, -0mm from bayonet mount when engaged
K-factor: 1.3
AE tolerance: +/- 0.5EV

Battery-test voltage:
2.2 +/- 0.1V (LCD blinks)
2.0 +/- 0.1V (LCD off, shutter won't release)
Initial tension, aperture-ring return spring: 6.7 turns
Initial tension, aperture subspring: 2 turns
Frequency, XL1 oscillator: 2MHz (measured at XL1 TP, Fig. 31)
Frequency, master clock: 31.25KHz (measured at clock TP, Fig. 30)

Voltages:
VCC1 - 5.5V
VCC2 - 13V
VDD1 - 6V
VL1 - 3V

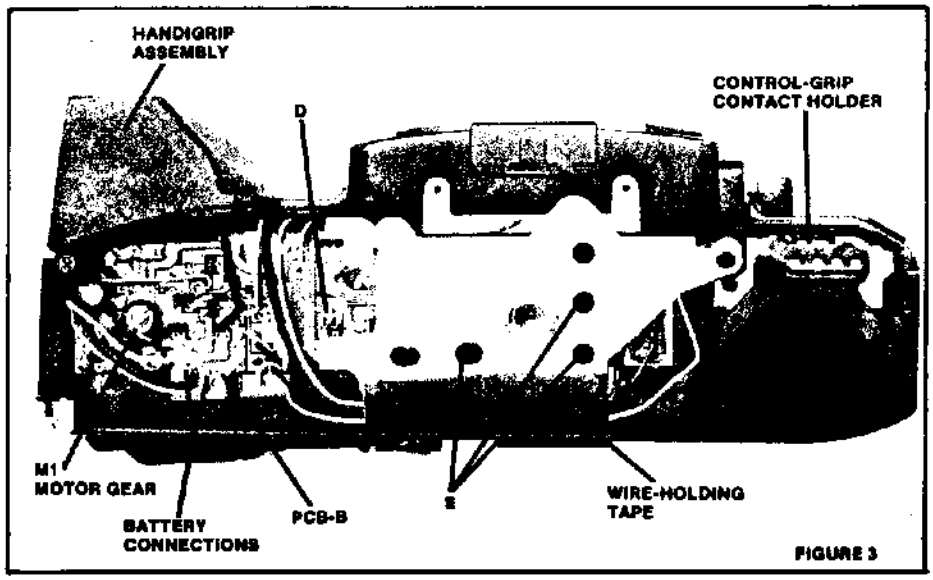


FIGURE 3

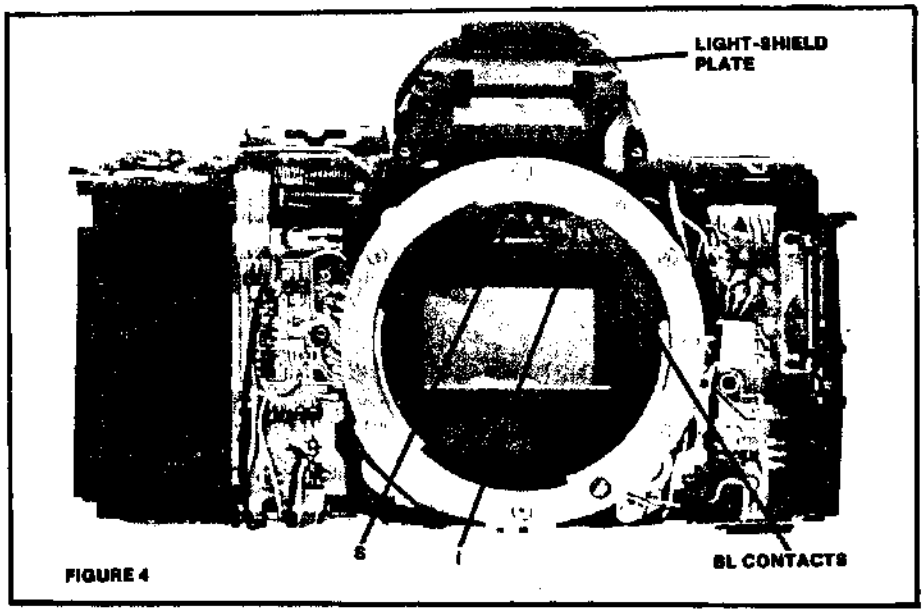


FIGURE 4

ADJUSTMENT SEQUENCE:

1. A/D conversion voltage, Fig. 29
2. Auto exposure

Note: Use a dummy top cover with clearance cutouts over the variable resistors or shield the top of the camera from ambient light when adjusting the auto exposure.
a. Set A mode, ASA 100, manual focus mode.
b. Check at EV 10 (set f/5.6) or EV 11 (set f/8). The LCD should read 1/30, and the shutter should deliver 31.3ms.
c. Adjust B, Fig. 2, for an accurate exposure. Also check the exposure at EV5 and EV15.
d. Check at the S and program modes. The exposure should stay within 0.5EV.

3. TTL flash control
a. Install a dummy top cover (wires connected) that has clearance cutouts for the variable resistors.
b. Mount the 2800AF flash to the hot shoe. Set the flash

control to "Hi."
c. Load film. Minolta suggests using Kodacolor VR100 that has been exposed to room light for at least one day.
d. Center the camera 2m from a 1.3 x 2m 18% neutral-gray reflecting surface.
e. Set the camera to A mode, ASA 100, f/5.6.
f. Release the shutter while measuring the reflected light with a flash meter at the film-plane position. The flash meter should indicate f/4.0 +7/10 +/- 0.5EV (using normal camera lens). With the special Minolta fixed-aperture test lens, the reading should be f/5.6 +/- 0.5EV. Adjust with C, Fig. 2.

AUTOFOCUS TESTS:

To adjust the autofocus, Minolta uses a special tester (I/O tester, a computer that measures circuit responses to different targets). Minolta doesn't supply the I/O tester. Repairs that require adjusting the autofocus should therefore be sent to Minolta. Check the autofocus by verifying the film-plane focus at different target distances (if the autofocus doesn't bring the image into focus — yet the green focus LED turns on — the EZ adjustment may be incorrect). To check the area coverage (CCD position), Minolta supplies a test chart (AF chart II) that has a white rectangle at the center of a pattern area. To test:

a. Position the camera 2m from the chart. Make sure the chart is evenly illuminated.
b. Center the AF frame (center of finder) on the white rectangle of the test chart.
c. Set the AF focus mode.
d. Push the release button part way. The two red-arrow focusing LEDs should flicker, indicating insufficient contrast.
e. Move the camera until the AF frame includes a pattern area of the chart.
f. Push the release button part way. The lens should move to the 2m position, and the green focus LED should turn on.

Note: If the lens will focus on the white rectangle, the CCD position or submirror angle is incorrect (the CCD sees the pattern area of the chart).

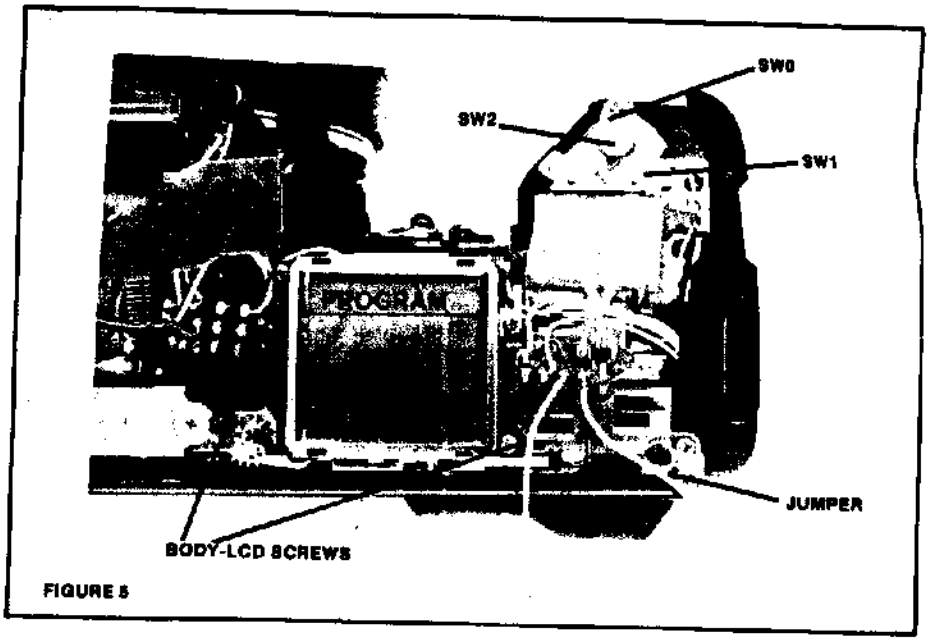


FIGURE 5

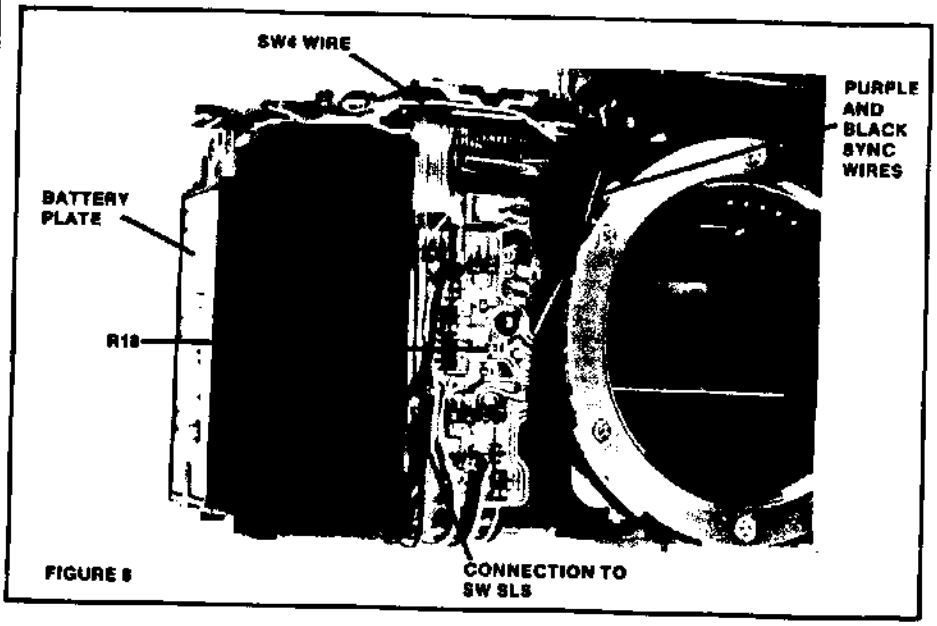


FIGURE 6

SWITCH TESTS AND ADJUSTMENTS:

1. Winding-completion switch SW4

Note: To check SW4, rotate the motor gear, Fig. 3, from the bottom. Use a spanner that fits the two slots at the top of the motor gear.

a. Disconnect the yellow SW4 wire from the PCB-A flex, Fig. 30. Connect an ohmmeter between the yellow wire and ground.
b. Rotate the M1 motor gear from the bottom, Fig. 3, in the reverse direction (CCW) to raise the mirror. SW4 should now be open, and the ohmmeter should show infinite resistance.
c. After the mirror has reached the up position, start rotating the motor gear in the advance direction (CW). As you start turning the motor gear, you

should hear a "click" as SW4 closes. The ohmmeter should show direct continuity.
d. If you continue turning the motor gear until the sprocket stops, SW4 should open. However, this requires several rotations of the motor gear. To speed up the test, rotate the sprocket (from the back of the aperture) in the film-advance direction. When the sprocket stops, SW4 should open; the ohmmeter should show infinite resistance.
e. Adjust by bending the SW4 contact, Fig. 17 (with SW4 open, the fixed contact should be against the plastic post as shown in Fig. 17).

2. Mirror-up switch SW40
a. Check and adjust with the mirror box removed, Fig. 22. Connect an ohmmeter between the orange SW40 wire and ground. The ohmmeter should show infinite resistance.
b. Turn the charge gear, Fig. 22, counterclockwise (as seen from the top) until it stops.
c. Allow the charge gear to return slowly while you're watching the clutch gear, Fig. 22. When the clutch gear has returned three teeth, turn eccentric J, Fig. 22, to break continuity (open the switch). Then turn the eccentric until you just get continuity.

3. Rewind switch 3
a. Check with an ohmmeter between the black wire and the blue wire of the rewinding base plate, Fig. 30.
b. Rotate the rewind fork. Through most of the rotation, the ohmmeter should show direct continuity. At one point in the rotation, the ohmmeter should show infinite resistance.

OTHER ADJUSTMENTS:

1. LCD finder display
Loosen the two screws holding the in-finder holder (G in Fig. 8). Shift the infinder holder until the finder LCD is centered on — and parallel to — the lower section of the focusing-screen mask.

2. AF coupler
a. Remove the lens.
b. Working behind the bayonet ring, disengage the lens latch,

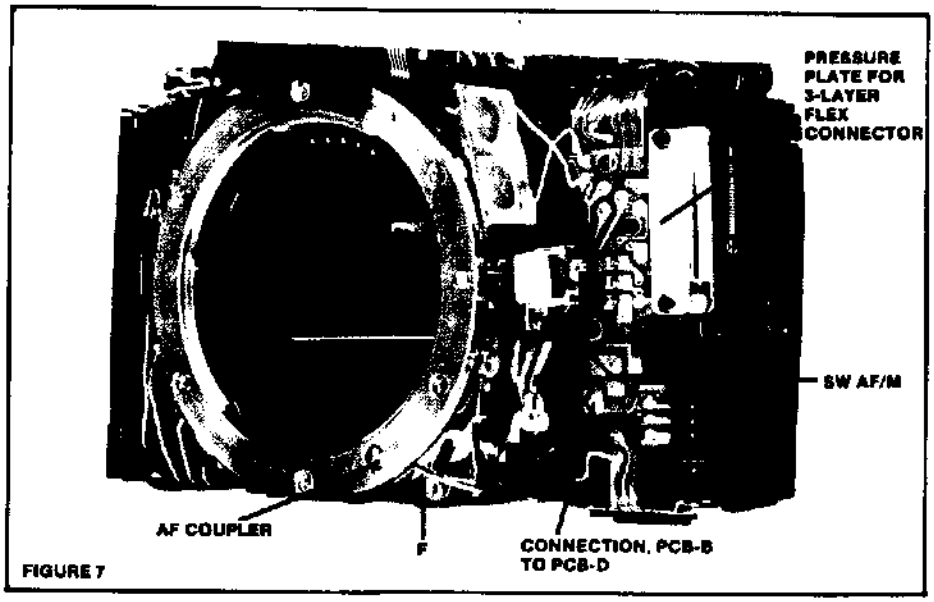


FIGURE 7

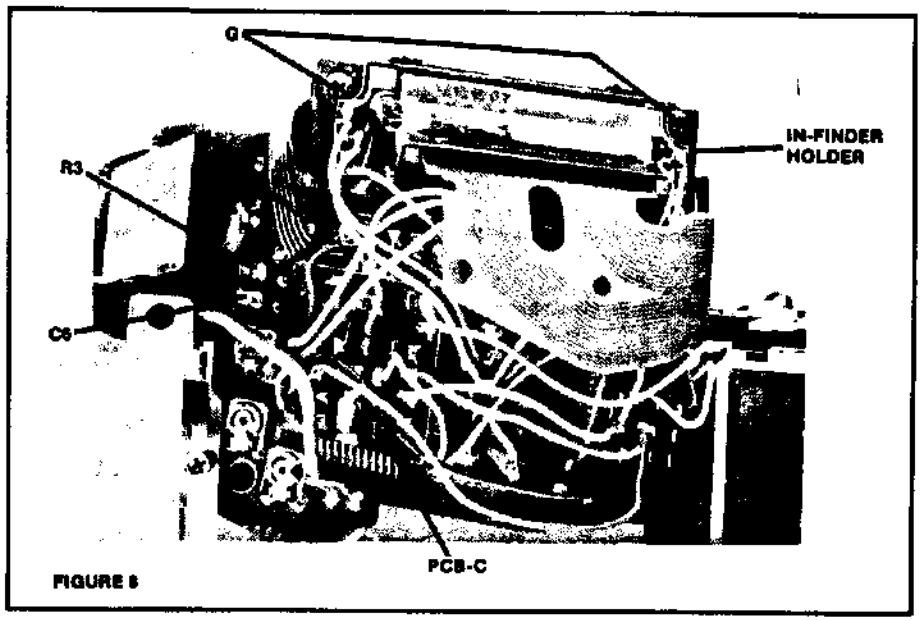


FIGURE 8

Fig. 24. The AF coupler then moves toward the front of the camera (engaged position).
c. The AF coupler should now project 1.6 + 0.2, -0mm from the lens mount. Adjust with screw F, Fig. 7.

OPERATING INSTRUCTIONS:

1. When installing batteries, first turn off the main switch, Fig. 1 (otherwise, the LCDs may be erratic when power is first applied). Unscrew the coin-slotted screw (end of camera) and remove the battery holder. The contact assembly is hinged, allowing you to reach the four battery positions. When you replace the battery holder, the body LCD indicates the standby mode — the "program," "film," and frame # (0 with no film) LCDs turn on, Fig. 5.

2. The main switch, Fig. 1, has two on positions — with or without the piezo buzzer. In

either position, the metering LCDs turn on when you touch the top of the release button (or when you push the release button part way). The body LCD and the finder LCD both indicate the shutter speed and f/stop which will be automatically programmed. The metering LCDs remain on for 10 seconds after you remove your finger from the release button.

3. In low light (BV2.5 or lower), touching the release button also turns on three yellow LEDs (visible through the top-cover window to the front of the pentaprism). The yellow LEDs illuminate the finder LCD. The LEDs remain on for 10 seconds (unless the light increases above BV2.5).
4. For a slow-speed warning, the piezo beeps when you touch the release button (with the main switch in the sound position). The shutter speed at which the piezo beeps depends on the focal length of the lens in use:
   — shorter than 35mm — 1/20 and slower
   — 35mm to 105mm — 1/45 and slower
   — longer than 105mm — 1/125 and slower
5. Set the focus mode with the AF/M switch (rewind side of lens mount). In the AF mode, the lens moves to the focus position when you push the release button half way. The AF focuses on a subject located within the AF frame at the center of the finder.
6. When the lens reaches proper focus, the piezo beeps (if the main switch is in the sound position). Also, the green focusing LED turns on (bottom of finder). The shutter won't release unless the green focusing LED turns on.
7. If the light level or subject contrast is too low for proper focusing, the two red-arrow focusing LEDs (one on either side of green LED) flicker. The shutter then won't release. If the subject is too close for proper focus, the red-arrow LED to the left of the green LED flickers.

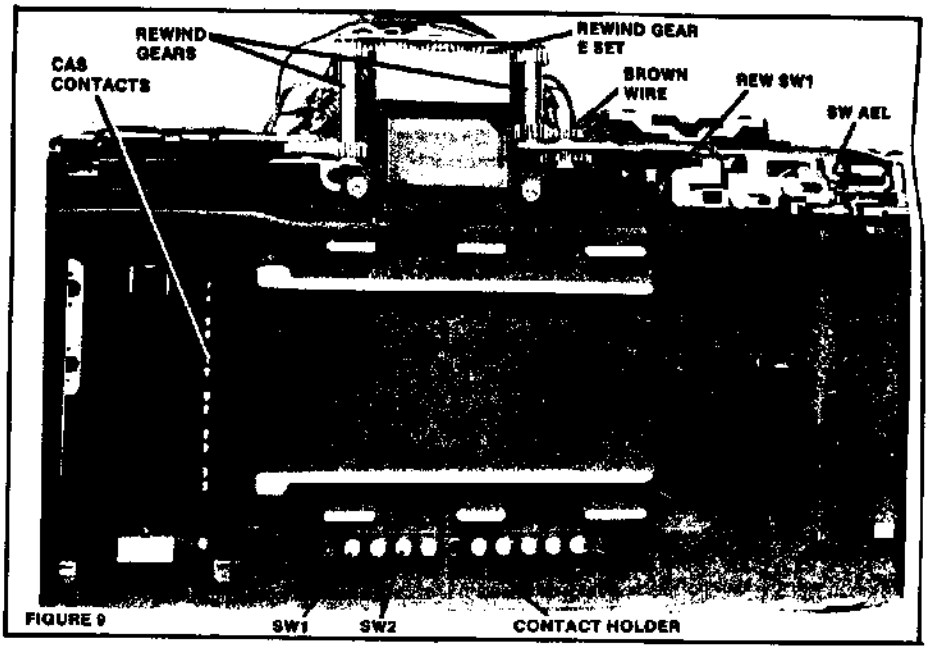


FIGURE 9

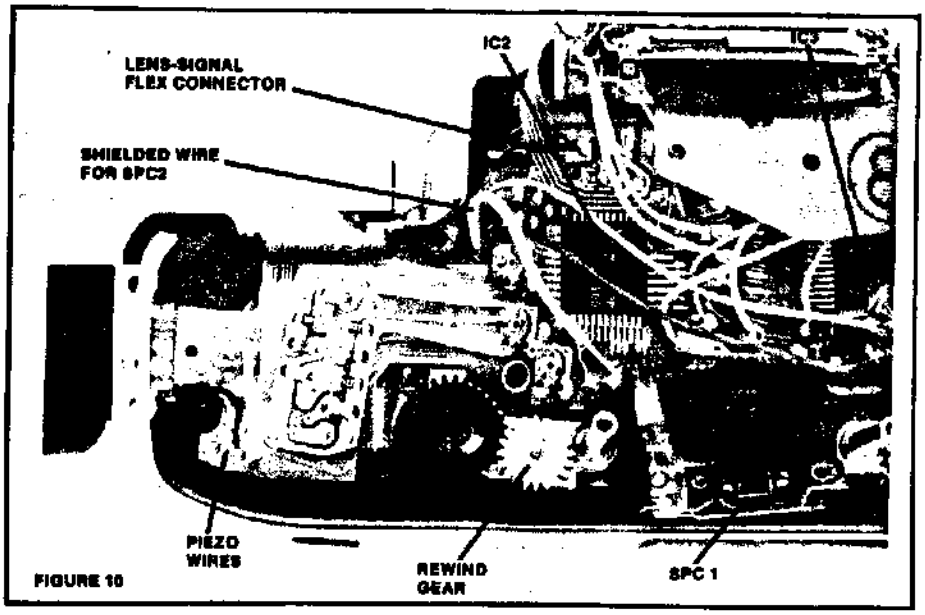
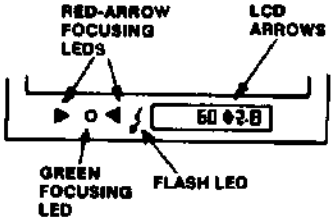


FIGURE 10



FINDER DISPLAY

8. The lens remains at the focus setting as long as you hold the release button partially depressed. You can then compose the picture the way you want it; to change the focus, let up and redepress the release button part way. Fully depress the release button to release the shutter.
9. In the manual focus mode (AF/M switch at M), the shutter will release regardless of the focus setting. The finder

LEDs provide a focus aid. Touch the top of the release button. Then turn the focus ring in the direction indicated by the red-arrow LEDs. When the lens is in focus, the green focusing LED turns on.

10. The camera program and the lens focal length determine the aperture/shutter speed combination. However, you can change the combination by using the program shift. Press either of the shutter-speed keys, Fig. 1, until the LCD shows the combination you want. The shifted settings remain for 10 seconds after you remove your finger from the release button. The mode and metering LCDs flicker to indicate that the program shift is in use. After the exposure, the program returns to normal.
11. To change the mode from program, hold down the mode key (top, rewind side) and push either of the shutter-speed keys, Fig. 1. The LCDs show the mode setting — A (aperture-preferred), S (shutter speed preferred), or M (manual).
12. A mode. The camera automatically sets the shutter speed. The LCDs display the manually set f/stop and the automatically set shutter speed. To change the f/stop, push the aperture keys (up key or down key, Fig. 1), until the f/stop you want appears on the LCD (the aperture will only change if the LCD is on). If the conditions require a shutter speed faster than 1/2000, the "2000" LCD flickers (set a smaller f/stop). If the conditions require a shutter speed slower than 30 seconds, the 30" LCD flickers (set a larger aperture). If the light level is outside the metering range, the two LCD arrows in the finder flicker (between the f/stop and shutter speed indications).
13. S mode. The camera automatically selects the f/stop. The LCDs show the manually selected shutter speed and the f/stop that will be automatically set (shown in 1/2 stop increments). Set the shutter speed by pushing the shutter-speed keys, Fig. 1 (up key for faster speeds, down key for slower speeds). The metering LCDs must be on (shutter speed displayed) before the shutter speed will change. If the conditions require an aperture larger than the lens can set, the LCD indicating the maximum aperture flickers. If the required f/stop is smaller than the lens can set, the LCD indicating the minimum aperture flickers. You can set the shutter to "bulb" in the S mode. However, the diaphragm will then stop down to the smallest aperture. For bulb exposures, use the M mode.
14. M mode. Set the shutter speed using the shutter-speed keys and set the f/stop using the aperture keys. The LCDs show the manual settings. The LCD finder arrows (between the f/stop and shutters speed LCDs) provide metering. When you can see both LCD arrows, the exposure setting is correct. If just the arrow pointing up appears, the settings will cause

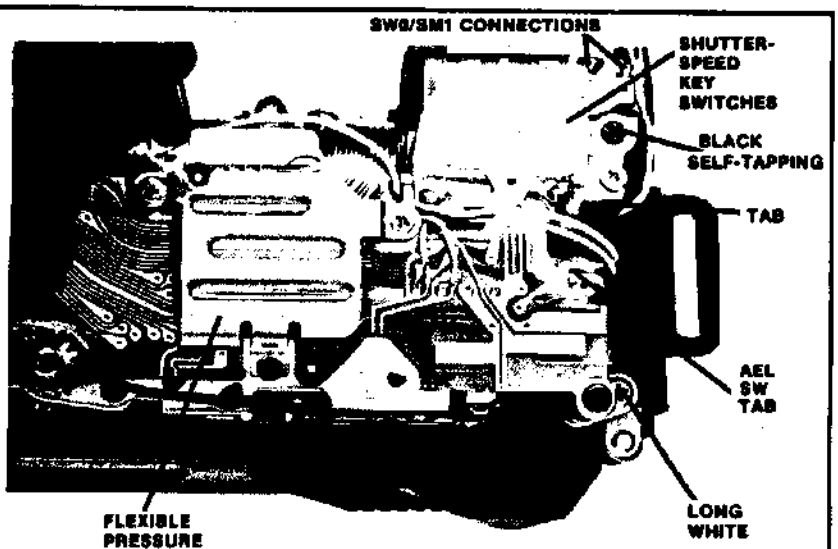


FIGURE 11

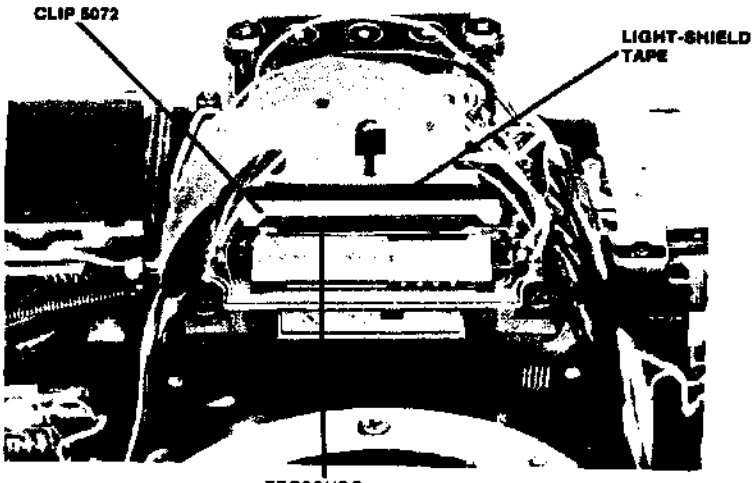


FIGURE 12

overexposure. If just the arrow pointing down appears, the settings will cause underexposure. If the light level is outside the metering range, both LCD arrows flicker.

15. At the bulb setting, the film-frame LCD becomes an elapsed-time counter. The LCD counts the seconds that the shutter remains open on bulb.
16. The drive key, Fig. 1, sets single, continuous, or self-timer. The normal drive is single, with the cursor (bar) over the S of the body LCD. The motor then advances one frame after the shutter closes; to take another picture, let up and redepress the release button. Change the drive to continuous by holding down the drive key and then pushing a shutter-speed key until the cursor is over the C. The camera then releases and winds continuously as long as you hold down the release button. Position the cursor over S for self-timer mode.
17. On self-timer, the film-frame LCD changes to "10" when you push the release button fully. The LCD now counts down the seconds during the delay. The red LED at the front of the camera flickers, changing frequency during the delay and then glowing steadily just before the shutter releases. If the main switch is in the sound position, the piezo beeps at the same frequency as the LED flashes. You can cancel the self-timer during the delay by turning off the main switch. When you turn on the main switch, the drive remains in self-timer mode. However, the self-timer will start over at 10 seconds.
18. Use the +/- key, Fig. 1, to set an exposure compensation. Hold down the +/- key and push a shutter-speed or aperture key. The body LCD shows + for overexposure and - for underexposure as well as the number of stops correction (up to 4 stops). The + or - LCD remains on after you let up the + -key. But you must depress the + - key to read the number of stops correction.
19. To reset the mode to program, the drive to S, or to cancel the exposure compensation, depress and let up the program-reset switch, Fig. 1. Removing and replacing the battery holder also resets the circuit to program mode, S drive, and 0 exposure compensation.
20. Depressing the AEL button (back of camera, wind side) turns on the metering LCDs and locks the exposure in memory. The LCDs remain on 10 seconds after you let up the AEL button. However, the exposure then changes with light conditions.
21. To open the back, depress the button at the left end of the camera and slide down the back latch. Load the film by aligning the end of the leader with the red mark near the take-up spool. Film-threading is automatic. When you close the back, the motor runs and advances the film to the first frame. The frame # LCD then shows "1." With no film in the camera -- or if the film doesn't

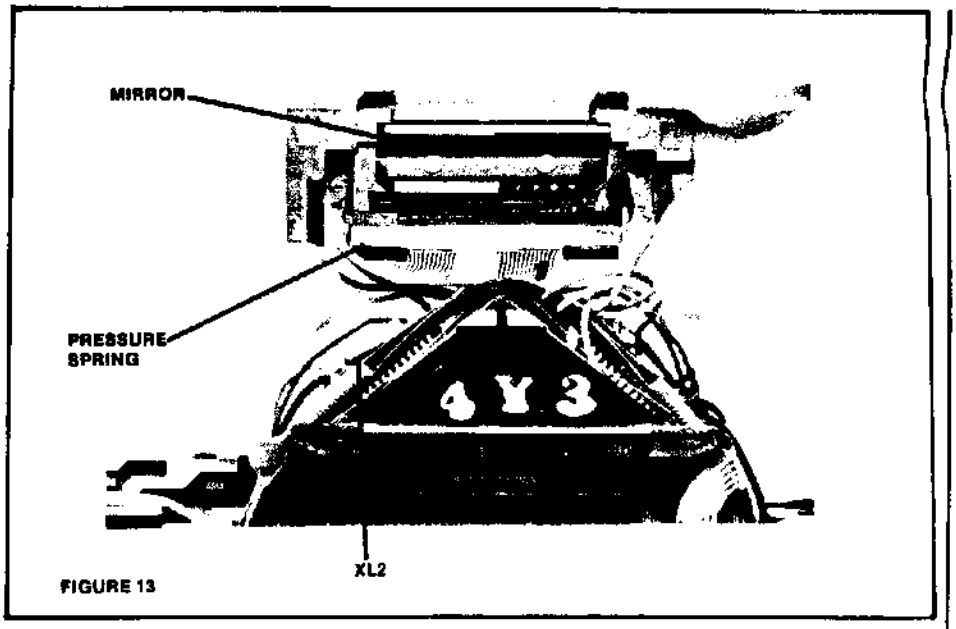


FIGURE 13

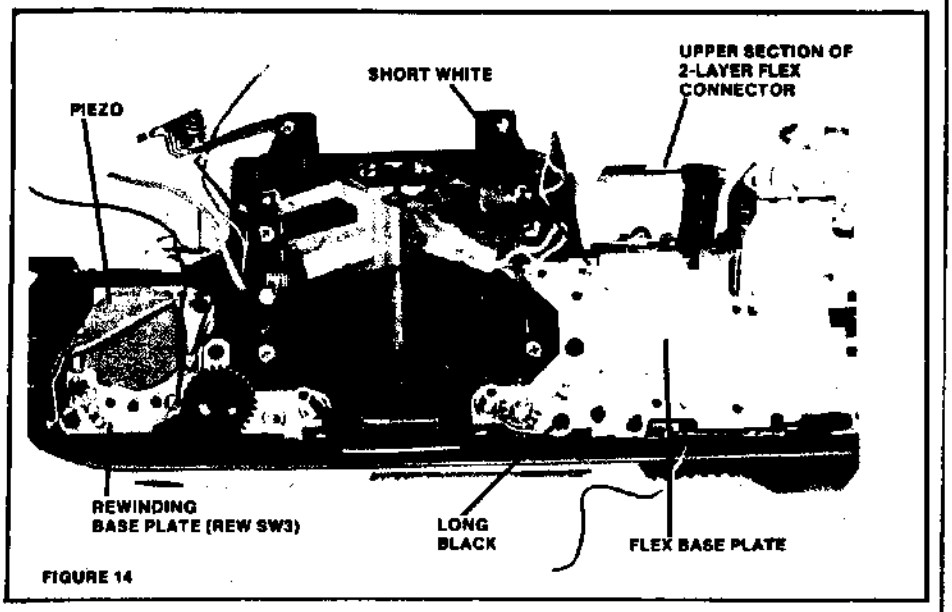


FIGURE 14

load properly — the frame # LCD remains at 0.

22. The CAS code on the DX film cartridge automatically sets the film speed. After the film has advanced to the first frame, the body LCD shows the film speed that has been automatically set. The ISO LCD remains for 10 seconds (or until you touch the release button). You can override the setting by holding down the ISO key and then pushing a shutter-speed key. The body LCD shows the ISO setting each time you depress the ISO key.
23. At the end of the film, the mode and metering LCDs shut off and the shutter won't release. The "film" LCD and the frame # LCD flicker to indicate the end of the film.
24. To rewind the film, push in the rewind latch and slide the rewind lever toward the eyelens, Fig. 1. The rewind lever latches in the rewind position. Now the motor runs, rewinding the film. During the rewind, the frame # LCD stops flickering; the "film" LCD continues to flicker. When the film is completely rewound into the cartridge, the frame # LCD indicates 0 and the motor stops. The rewind lever returns to the normal position when you open the camera back.
25. When you turn off the main switch, the circuit memorizes the frame number, film speed, exposure mode, drive mode, exposure compensation, and manually set exposures. The operating batteries supply the power for memory. If the operating batteries are low (or if you remove the battery holder), the built-in lithium battery retains the film speed and frame number in memory. The LCDs blink as a low-battery warning after you release the shutter.
26. The lithium battery should last around 10 years. When the lithium battery is low, the film-speed setting LCD blinks as a warning (providing the operating batteries are good). Current is drawn from the lithium battery only when the operating batteries are low.
27. The 4000AF and 2800AF flash units provide infrared focus assist for low-light situations. If the light level is below EV4 (determined by the camera's metering system), the flash emits two beams of near-infrared light when you push the camera's release button part way. The lens then moves to the proper focus position.
28. If you're using flash in the program mode, the camera selects the flash aperture according to the flash-mode program and the available light (larger aperture in lower light to get more available-light effect). The flash LED in the finder (lightning flash) blinks to indicate the flash is charged. After the exposure, if the light output from the flash resulted in proper exposure, the flash LED flickers at a higher frequency.
29. The flash automatically sets the shutter-speed. The TTL flash control in the camera cuts off

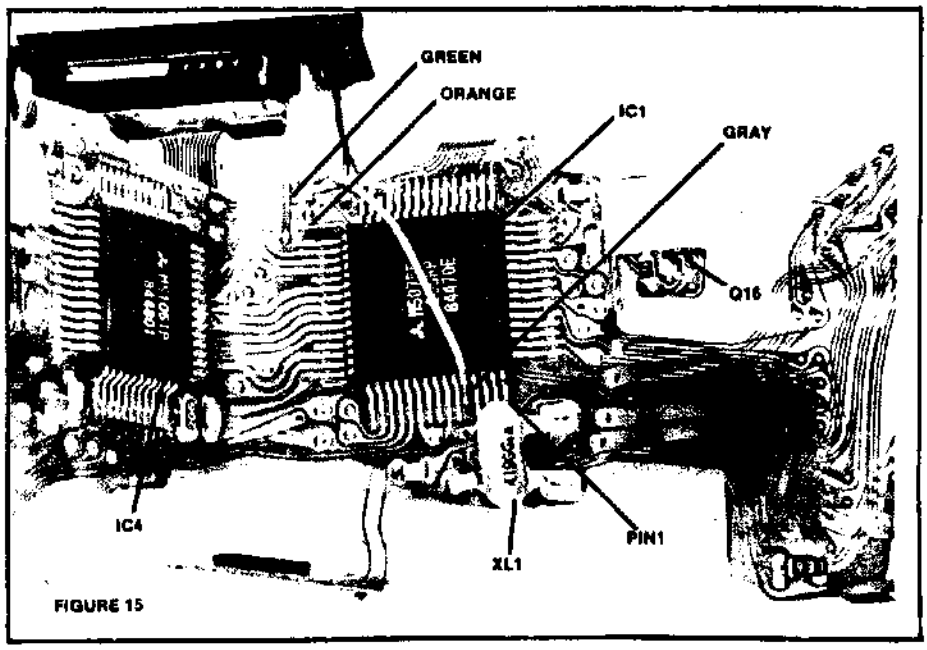


FIGURE 15

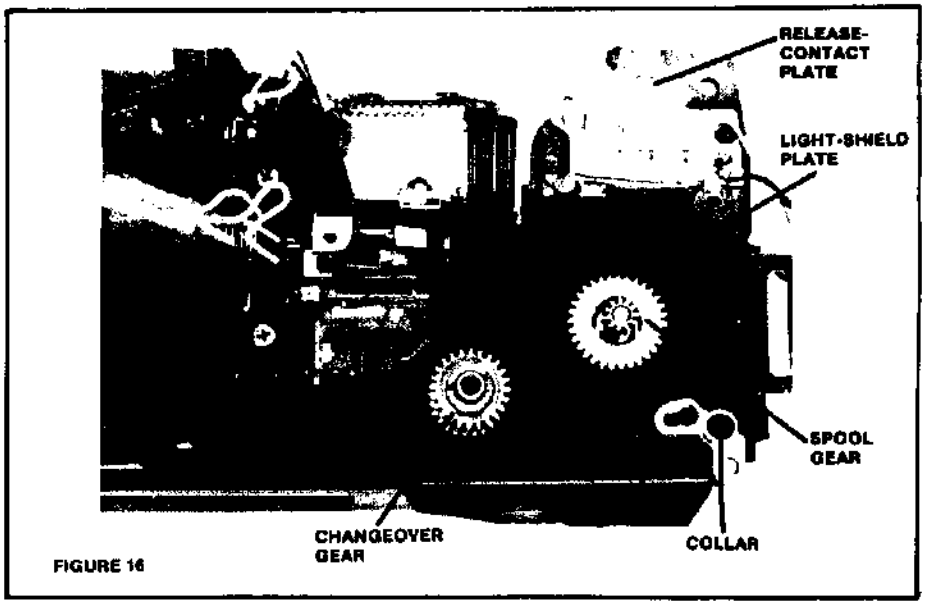


FIGURE 16

the flash output at the proper moment for correct flash exposure. The SPC at the bottom of the mirror box (SPC2) reads the flash reflected from the film.

30. In the P and S modes, the flash speed depends on the light level. Above EV12, the flash sets the shutter to 1/100. At EV12 and lower, the flash sets the shutter speed to 1/60 for more available-light effect. In the M mode, the flash automatically sets the shutter to 1/100 if the manual speed setting is faster than 1/100. At slower speed settings, the shutter delivers the selected shutter-speed.

OPERATING CHARACTERISTICS, ANOMILIES:

Certain circumstances may cause the owner to think there's a camera malfunction. The following indicate normal operation:

1. If you touch the top of the release button as you install the batteries (main switch on), the LCDs will blink. To stop the blinking, turn off the main switch. Recommend that the customer turn off the main switch before installing batteries.
2. In very bright light, the finder LCD will have a streak running across the display.
3. If you're using flash on the M mode, and if the shutter is set to a speed faster than 1/100, the flash changes the shutter speed to 1/100. When you then remove the flash, the circuit can't reset the original shutter speed — the speed remains at 1/100. Use the shutter-speed keys to reset the shutter speed.
4. Without the lens, you can see a small circle inside the AF frame (center of Fresnel).
5. On manual-focus mode, there's some free play in the focus ring (normal because the autofocus requires very free movement).
6. After you release the shutter and the exposure has been made, the diaphragm will stop down fully before reopening. The lock for the aperture magnet is temporarily disengaged as the gears rotate.

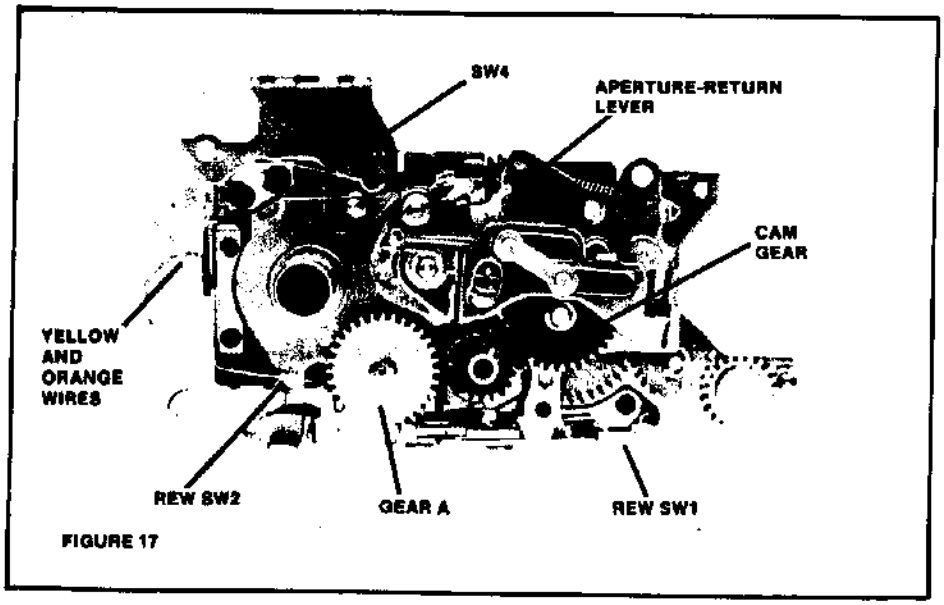


FIGURE 17

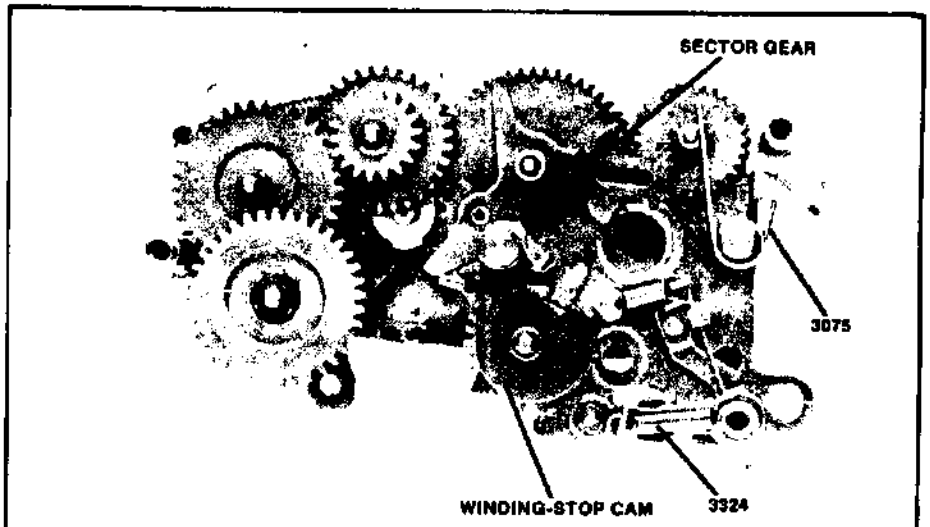


FIGURE 18

LOCATIONS AND FUNCTIONS OF SWITCHES:

SW0. Touch switch, Fig. 5. Contact to ground when you touch the top of the release button. Turns on the DC/DC converter and the metering system. The LCDs now display the exposure settings.

SW1. Metering and AF switch, Fig. 5. Closes when you push the release button half way. Turns on the DC/DC converter and the metering system (if the conduction through the touch switch wasn't sufficient) and the AF. The lens now moves to the focus position.

SW2. Release switch, Fig. 5. Closes when you fully depress the release button. The winding motor M1 then starts running in the reverse direction to raise the mirror.

SW4. Winding-completion switch in wind-gear unit, Fig. 17. Switches on at the start of the M1 forward cycle to keep the winding motor running. Opens at the end of the wind cycle to shut off the motor.

SW40. Mirror-up switch on mirror box, Fig. 23. Closes when the

mirror reaches the up position to signal the shutter-start cycle.

SW400. Motor switch on mirror box, Fig. 23. Closes when the mirror is part way up. When the motor then switches to forward rotation, SW400 keeps M1 running until SW4 closes.

SWM. Main switch, Fig. 2. Has three positions — on, off, and on with sound (piezo buzzer). With SWM in the off position, the LCD won't display the exposure settings and the shutter won't release (mode and film frame are still displayed).

SW RC. Back-cover switch in back-cover latch. Closes when you slide the latch to open the back cover. Opens when the latch slides up to lock the back cover. The motor then runs, advancing the film to the first frame.

REW SW1. Rewinding switch 1, Fig. 9. Closes when you slide the rewind lever to the rewind position. Q15 then turns off so the signal from REW SW3 will be input to IC1.

REW SW2. Rewinding switch 2, Fig. 17. Closes when the rewind lever latches in the rewind position. The winding motor M1 now runs in the forward direction to rewind the film.

REW SW3. Rewinding switch 3 at the rewind end of the camera. As the rewind fork rotates, REW SW3 sends a pulse signal to IC1. The signal cancels an 8-second timer, allowing M1 to continue running.

SWSLS. Film-detecting switch. Closes when the metal film-guide roller touches the conductive rubber of the take-up spool. SW SLS opens when the film comes between the roller and the conductive rubber. Opening SW SLS enables the film counter. When SW SLS closes, the frame counter returns to 0 and M1 shuts off to stop the rewind (M1 shuts off 5 seconds after SW SLS closes).

SW AEL. AE lock switch, Fig. 9. Closes when you push in the AEL button, turning on the metering circuit and locking the auto exposure.

SW AF/M. Focus-mode switch, Fig. 7. Open for AF mode, closed for M mode.

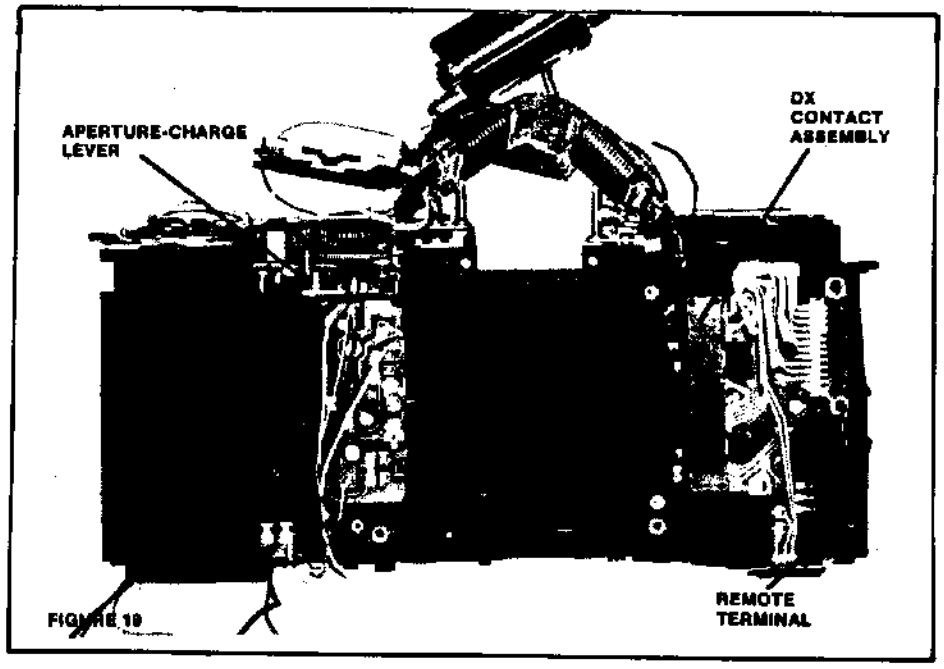


FIGURE 19

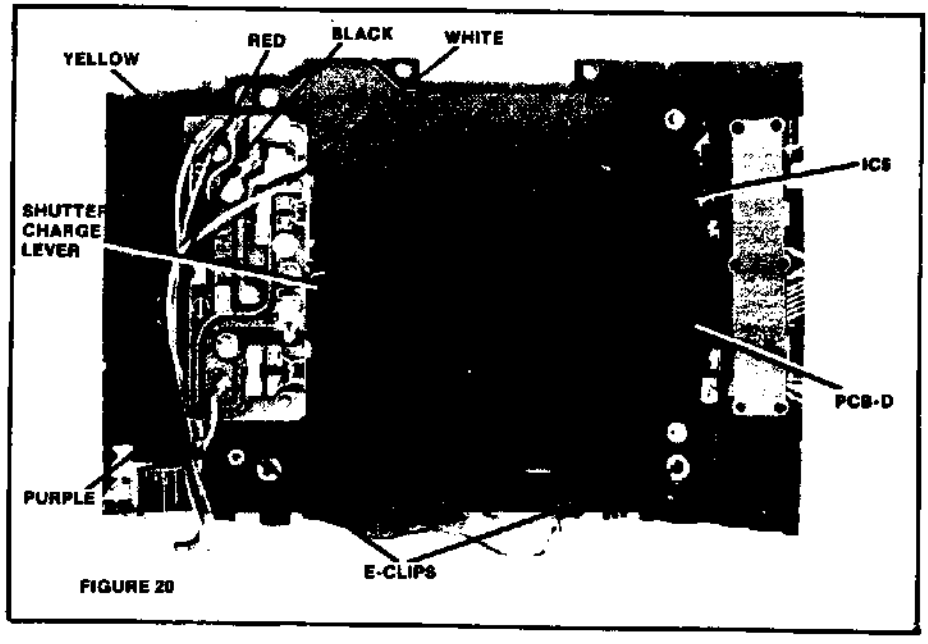


FIGURE 20

SW300. Program-reset switch, Fig. 2. Closing SW300 by pushing the program-reset button clears the microcomputers (IC1 and IC6). Allowing SW300 to open enables the microcomputers.

SW30. Battery-reset switch behind battery plate, Fig. 6. Operated by a pin on the battery holder. In parallel with SW300, acting as a reset switch when you install batteries. SW30 resets the circuit to single frame, program.

X1. X-sync contacts in shutter block. Connects X2 to ground when the first curtain reaches the open position. Open with the shutter cocked, closed with the shutter open.

X2. X-sync contacts in shutter block. Connects the purple wire (sync) to ground through X1. Closed with the shutter cocked and with the shutter open, open with the shutter released.

SW31. ISO key

SW32. +/- key

SW33. Exposure-mode key

SW35. Aperture-up key

SW36. Aperture-down key

SW37. Shutter-speed down key

SW38. Shutter-speed up key

CIRCUIT OPERATION:

I. Basics

A. The circuit uses 9 IC's mounted on 3 flex circuits:

1. PC board A set (PCB-A). Flex at the top of the camera, Fig. 2. Controls the metering, shutter speeds, aperture, and timing circuits. Has four IC's:

   IC1. Main microprocessor. Has built-in crystal-controlled clock. Provides the CPU for all camera functions except the autofocus.

   IC2. Light-measuring IC for available light and TTL flash. Includes the A-D converter.

   IC3. LCD driver for both the body and finder LCDs. Contains the built-in crystal-controlled clock for the LCDs.

   IC4. Input/output (I/O) IC. Connects the CPU to the input/output devices (magnets, optical encoders, etc.).

2. PC board B set (PCB-B). On mirror box, Fig. 22, for autofocus control. Has four IC's:

   IC6. AF microprocessor. Calculates the focus correction and provides the signals that drive the AF motor and the focusing LEDs.

   IC7. Serial memory for lens position. Contains the CCD (charge-coupled device) that detects the lens focus.

   IC8. Processing IC between IC7 and IC6. Shifts the focus information from the CCD and applies the signal to IC6.

   IC9. Driver for AF and winding motors. Receives signals from IC1 to control the winding motor M1 and signals from IC6 to control the AF motor M2.

3. PC board D set (PCB-D). On camera body, rewind side, Fig. 20. The inputs for the film speed (CAS coding on film cartridge) and the program back are on the PCB-D flex. Has IC5, Fig. 20. IC5 provides the memory for the film speed and frame number when the operating batteries are low.

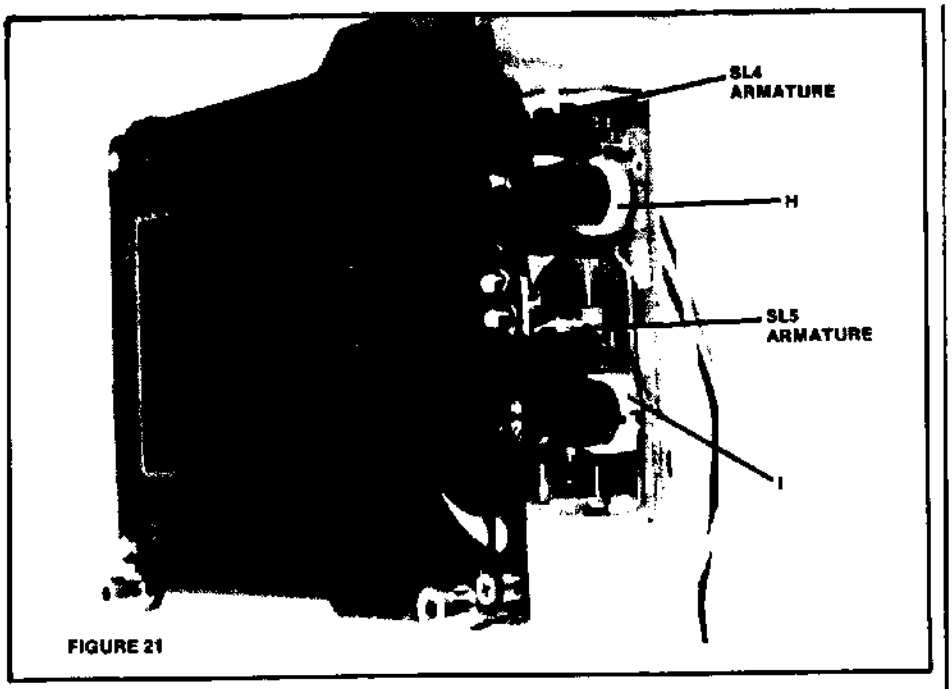


FIGURE 21

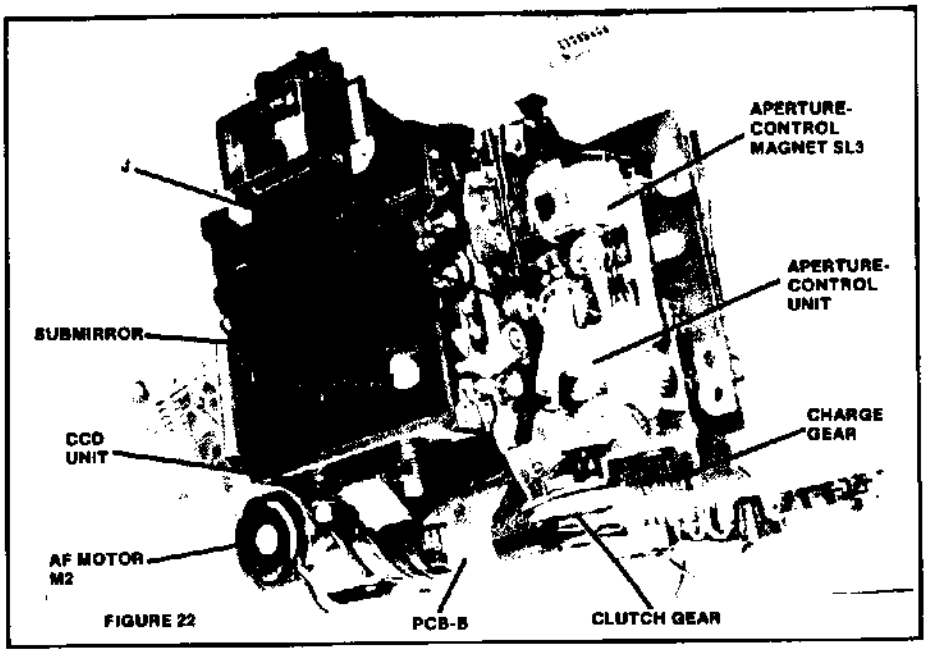


FIGURE 22

Note: Early versions of PCB-A have an additional IC — PCB-C, a hybrid IC mounted to the top of IC2 by double-sided tape, Fig. 8. PCB-C includes a transistor delay circuit linking the release switch to IC1 and a transistor circuit linking rewind switch 3 to IC1, Fig. 33. The current version of PCB-A has additional components on the back of the flex and a revised IC1 to eliminate PCB-C ("Revised Parts").

B. The circuit uses two motors:

1. M1. Winding motor inside take-up spool. IC9 drives M1 according to signals received from IC1. M1 rotates in the reverse direction to raise the mirror and permit the shutter to release. After the exposure, M1 rotates in the forward direction to charge the shutter and advance the film. On rewind, M1 turns the rewind fork.
2. M2. AF motor on mirror box, Fig. 22. IC9 drives M2 according to signals received from IC6. M2 turns the AF coupler, Fig. 7, to set the lens focus.

C. The circuit uses three magnets:

1. SL3. Hybrid aperture-control magnet on mirror box, Fig. 22. SL3 separates to stop the diaphragm at the proper f/stop.
2. SL4. First-curtain electromagnet in shutter block. When energized, SL4 holds the first curtain.
3. SL5. Second-curtain electromagnet in shutter block. When energized, SL5 holds the second curtain.

D. The circuit uses two optical encoders (photo-interrupters):

1. PI1. On the mirror box, Fig. 23. The interrupter disc rotates as the diaphragm closes, providing a sine-wave signal to IC4 (feedback for diaphragm position).
2. PI2. On the mirror box by the AF motor, Fig. 22. The interrupter disc rotates as the AF motor runs, providing the feedback signal for the lens position.

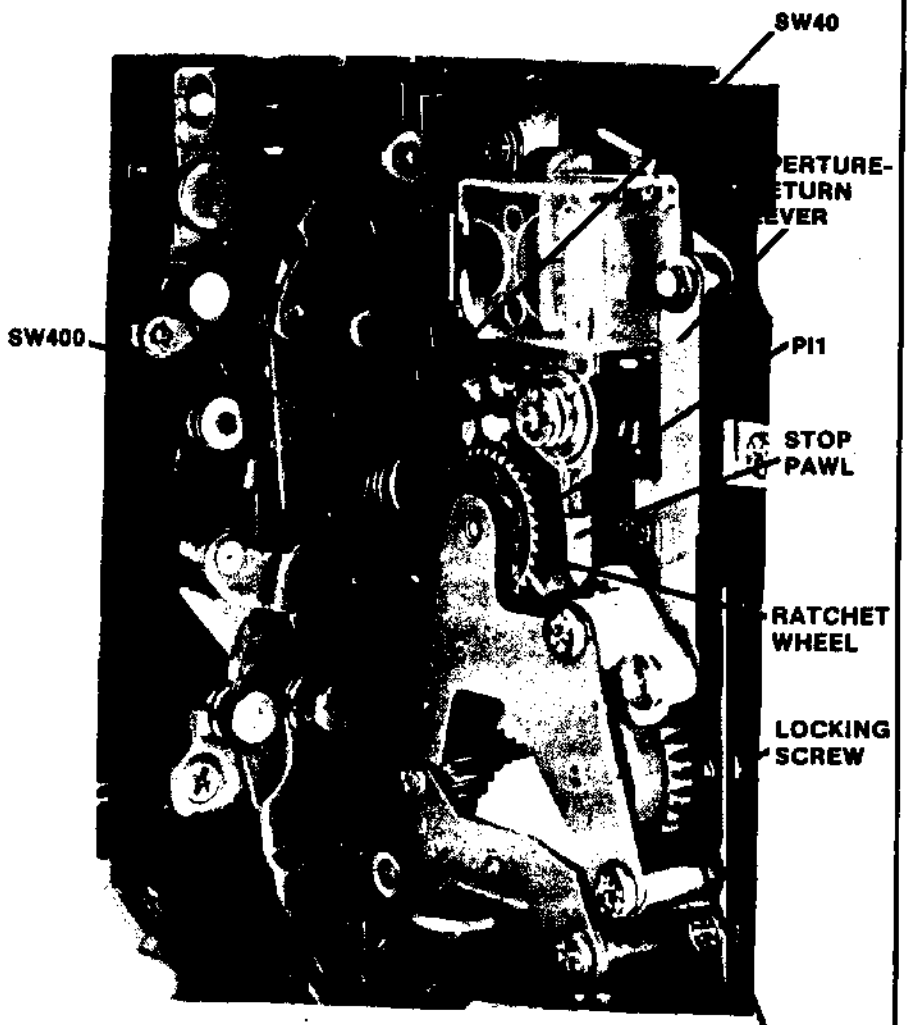


FIGURE 23

II. Power Supply

A. When you install the battery holder, SW30 (behind the battery plate) opens. SW30 serves the same purpose as the program-reset switch SW300. When either switch closes and then reopens, pin 58 of IC1 and pin 24 of IC6 switch from low to high; the signals clear and then enable the two microprocessors. IC1 sets the mode to program, sets the drive to single, and cancels any exposure compensation.

B. Battery voltage (VDD0) at IC4 pin 7 provides a monitor as to the condition of the batteries. If VDD0 drops to 2.2V, IC4 pin 2 switches low. The low signal at IC3 pin 2 causes the LCDs to flicker as a low-battery warning.

C. VDD1 (battery voltage at the emitter of Q5) turns on the crystal-controlled clock in IC3. Now IC3 turns on the "program," "film," and frame # LCDs.

D. Touching the top of the release button connects pin 45 of IC1 to ground (touch switch SW0). Pin 26 of IC1 switches low, turning on Q5 and the DC/DC converter. Q5 supplies the VCC1 regulated voltage (5.5V) to IC2, IC4, IC6, and IC8. The DC/DC converter supplies the VCC2 voltage (13V) to IC7 and IC8 for operation of the autofocus.

E. VCC1 also appears at collector of Q16 for the power-up reset circuit. The emitter of Q16 holds IC1 pin 25 low until C3 charges and turns on the transistor. Pin 25 then goes high, enabling the IC. The slight delay gives the master clock in IC1 time to stabilize.

F. As long as the operating batteries are good, no current flows from the lithium battery. However, when the battery holder is removed

(or when the operating batteries drop too low for memory-hold), the lithium battery supplies current to IC5 to memorize the film speed and the frame number.

G. IC4 checks the voltage of the lithium battery at pin 1. If the lithium battery drops below 2.3V, the ISO and ISO-setting LCDs blink for 10 seconds when you attach the battery holder or actuate the program-reset switch.

III. Metering

A. The VCC1 voltage (SW0 closed) turns on IC2. IC2 measures the ambient light on the focusing screen by the current through SPC1 (silicon photocell). The A—D converter in IC2 provides a digital BV signal to IC4 at pin 48 (IC4).

B. IC4 calculates the BV signal and sends the information to IC1 through the I/O bus. IC1 retrieves the film-speed information from IC1 and the lens information (minimum and maximum apertures) from the ROM (read only memory) IC in the lens.

C. IC1 calculates the f/stop and shutter speed and sends the information to the LCD driver IC3. IC1 also stores the information in memory for control of the shutter and aperture magnets.

IV. Autofocus

A. Light passing through the lens reflects from the submirror, Fig. 22, to the CCD (built into IC7). The CCD stores the lens-focus information.

B. When you close SW1, the focus information is shifted out of the CCD and into IC6. IC6 reads the lens information (focal length) from the lens ROM. Now IC6 calculates the amount of movement — and the direction of movement — needed to bring the lens into focus.

C. IC6 supplies the inputs to IC9, the driver for the motors. To run the AF Motor forward, IC9 switches as follows:

Inputs (from IC6)	Ouputs
pin 14 low	pin 1 high
pin 2 high	pin 15 low
pin 16 high	pin 13 low
	pin 3 high

Transistors Q11 and Q14 switch on; Q12 and Q13 switch off. Current flows through M2 in the forward direction. To run current through M2 in the reverse direction, the IC9 pins switch as follows:

Inputs	Outputs
pin 14 high	pin 1 low
pin 2 low	pin 15 high
pin 16 high	pin 13 high
	pin 3 low

Q11 and Q14 switch off; Q12 and Q13 switch on.

D. As the AF motor runs, optical encoder PI2 supplies a sine-wave signal to IC4. IC4 converts the signal to a square wave and sends the signal to IC6. IC6 counts the pulses and compares the count to that stored in memory.

E. When the counts are equal, IC6 switches the input pins of IC9 to stop the AF motor. IC9 pins switch

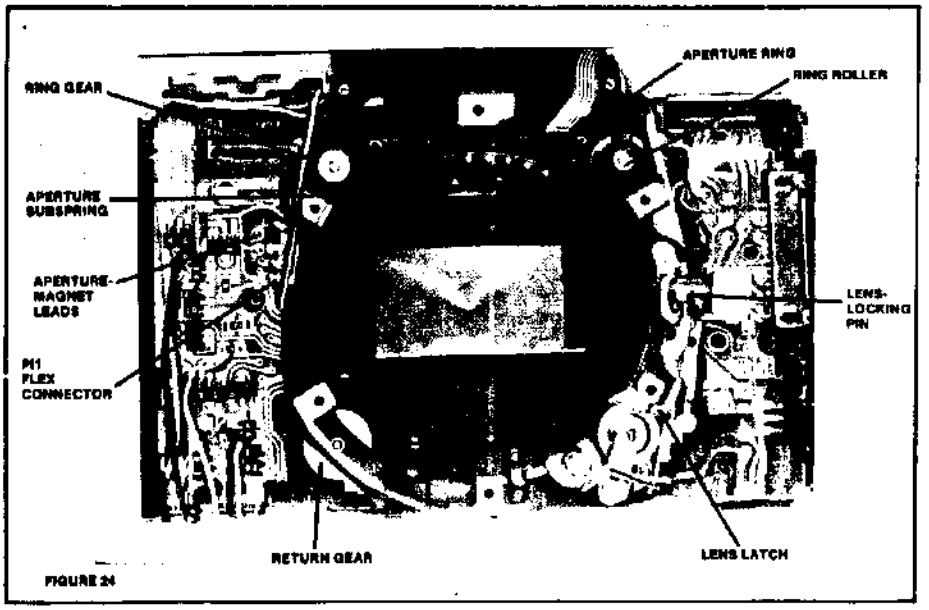


FIGURE 24

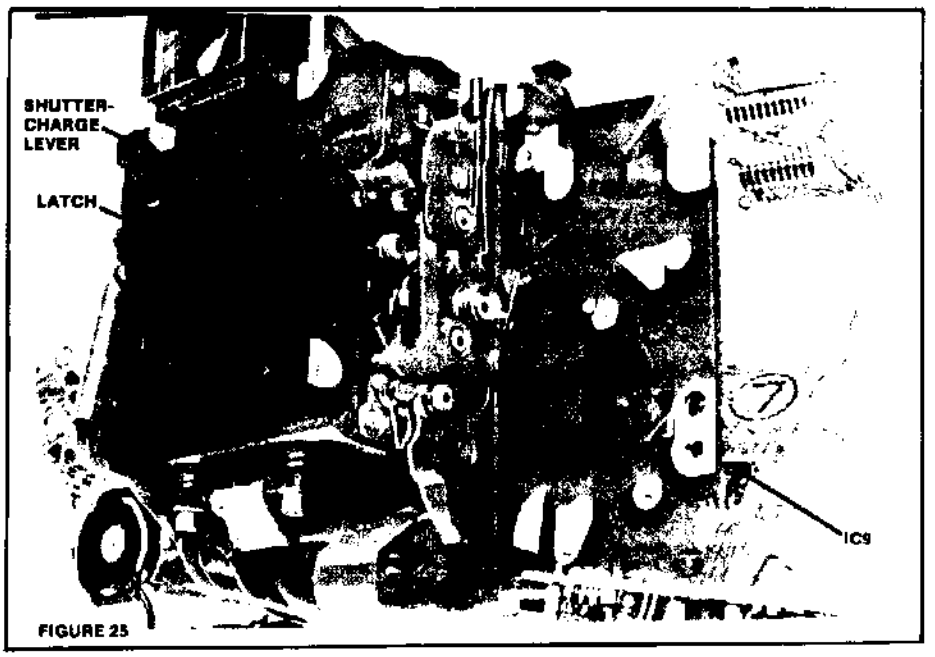


FIGURE 25

as follows:

Input	Output
pin 14 high	pin 1 high
pin 2 high	pin 15 high
pin 16 low	pin 13 high
	pin 3 high

Q11 and Q12 turn on, applying a brake to M2. At the same time, IC6 turns on the green focus LED and enables the shutter release.

V. Release

A. The two shutter magnets are energized when the release switch SW2 closes. The magnets hold the two curtains in the charged position.

B. IC1 supplies the inputs to IC9 to operate the winding motor M1. IC9 pins switch as follows:

Input	Output
pin 6 high	pin 7 high
pin 10 low	pin 9 low
pin 8 high	pin 11 low
	pin 4 high

Transistors Q2 and Q3 turn on; Q1 and Q4 turn off.

C. The winding motor runs in the reverse direction, turning the motor gear ccw, Fig. 3. The planetary gear, Fig. 26, shifts clockwise to raise the mirror and allow the diaphragm to close.

D. As the diaphragm closes, optical encoder P11 supplies a series of pulses to IC4 (8 pulses per f/stop). IC4 changes the sine wave to a square wave and sends the count to IC1. IC1 compares the count with that stored in memory. To stop the diaphragm at the proper aperture, IC1 sends a stop signal through I/O bus to IC4. IC4 pin 18 switches L, sending current through the aperture magnet SL3. SL3 separates, latching the ratchet wheel, Fig. 23, to stop the aperture ring.

E. As the mirror moves up, SW400, Fig. 23, closes. Closing SW400 will later keep M1 running in the forward direction until the winding-completion switch SW4 closes (during the wind cycle). One of the two switches must be closed before IC1 will supply the signals to run M1 in the forward direction.

F. After the mirror has completed its movement to the raised position, the mirror-up switch SW40 closes.

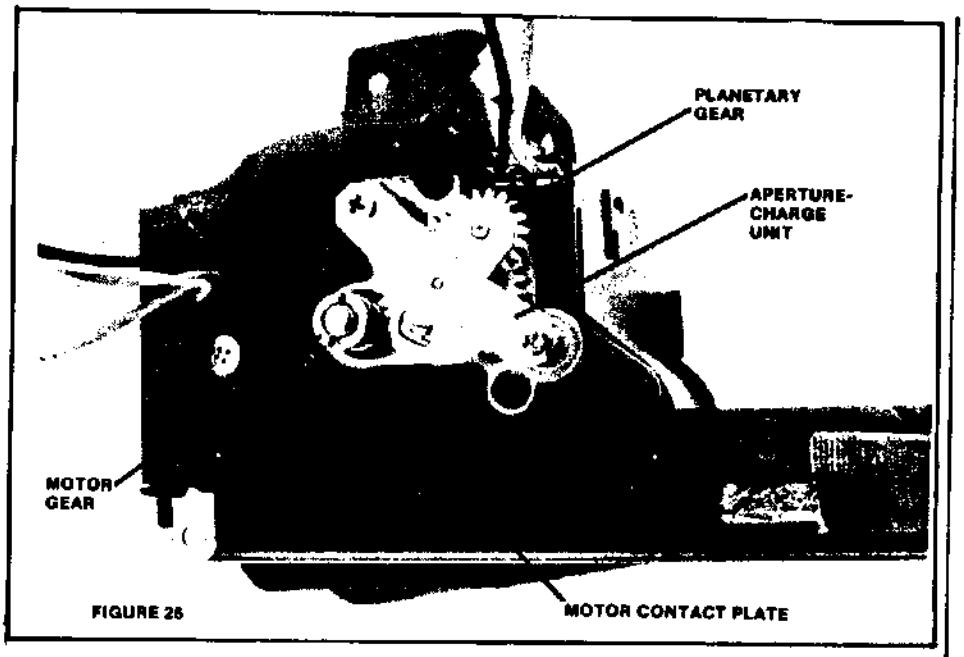


FIGURE 26

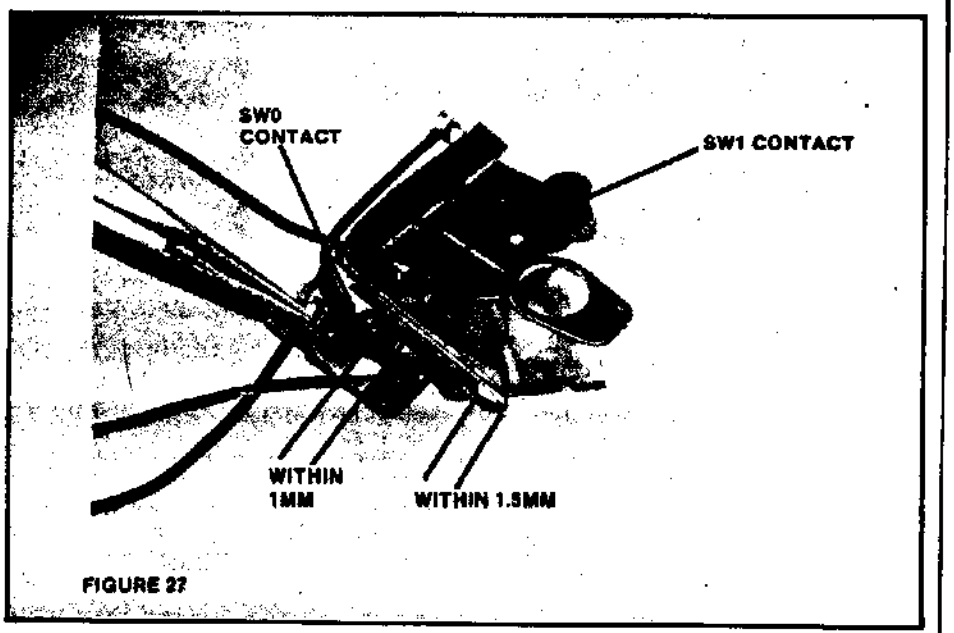


FIGURE 27

Now IC4 releases the first-curtain magnet by switching pin 16 H. IC1 times the exposure. To end the exposure, IC1 supplies the signal to IC4 through the I/O bus. IC4 switches pin 17 H, shutting off the second-curtain magnet.

G. 20ms after the second-curtain magnet separates, M1 starts turning in the forward direction (the motor gear turns CW as seen from the bottom, Fig. 3). The IC9 pin signals are as follows:

Inputs	Outputs
pin 10 High	pin 7 Low
pin 6 Low	pin 9 High
pin 8 High	pin 11 High
	pin 4 Low

Q2 and Q3 turn on; Q1 and Q4 turn off.

H. The planetary gear, Fig. 26, swings CCW to free the mirror. The spring-loaded mirror returns to the down position. As the mirror returns, SW400 opens. However,

SW4 (in parallel with SW400) is closed by the wind gears, Fig. 17. Closing SW4 before SW400 opens allows M1 to continue running in the forward direction.

I. As the wind-gear unit advances the film, it pushes forward the shutter-charge lever on the mirror box, Fig. 25, to charge the shutter. The shutter-charge lever on the mirror box latches in the charged position, holding the shutter cocked (the shutter itself doesn't latch).

J. The winding-stop cam, Fig. 18, rotates one turn and allows SW4 to open. IC1 then provides the signals to stop the winding motor. Q1 and Q2 turn on, providing a brake across M1.

VI. Rewind

A. The circuit detects the end of the film when SW4 fails to open (because M1 can't complete its winding rotation). If the circuit doesn't receive the SW4-off signal within 1.2 seconds after M1 starts its forward rotation, IC1 switches to the rewind mode. The "film" and frame # LCDs flicker, the metering LCDs turn off, and the shutter won't release.

B. When you move the rewind lever to the rewind position, rewind switches 1 and 2 close. M1 now runs in the reverse direction, raising the mirror (this action frees the wind gears). Then M1 runs in the forward direction to rewind the film. Moving the rewind lever to the rewind position allows the changeover gear, Fig. 16, to move up and engage the rewind gears, Fig. 9.

C. Closing REW SW1 turns off Q15, Fig. 30. Now the signal from REW SW3 is input to IC1 as the rewind fork rotates. REW SW3 switches on and off - one on-off-on signal for each rotation of the rewind fork. The signal tells IC1 that the film is rewinding properly. If the film binds, IC1 doesn't receive the input signal from REW SW3. IC1 then shuts off M1 in 8 seconds.

D. When the film comes off the take-up spool, it allows the film-detecting switch SLS to close — the metal film-guide roller comes against the conductive rubber of the take-up spool. M1 continues to run for 5 seconds, winding the film leader completely into the cassette. M1 then stops, and the frame # LCD changes to 0.

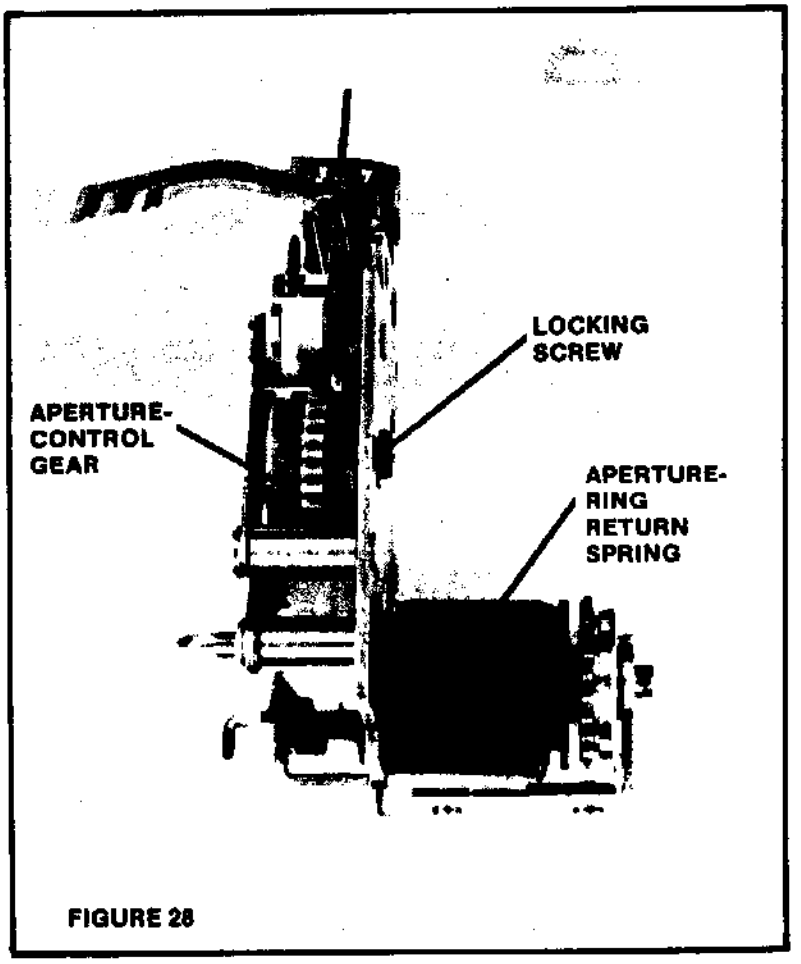


FIGURE 28

VII. Film loading

A. When you open the camera back and the rewind lever returns, REW SW1 and REW SW2 reopen.

B. The back-latch switch RC closes with the camera back open. SW RC then opens when the back is closed. Now M1 runs in the forward direction to wind on the film.

C. As the film winds around the take-up spool, it comes between the film-guide roller and the conductive rubber. SW SLS then opens, enabling the frame counter.

D. Since REW SW1 is also open, Q15 turns on. Q15 prevents the REW SW3 signal from reaching IC1.

E. M1 continues running until the winding-completion switch SW4 has closed and opened four times. M1 then stops, and the frame # LCD indicates "1." The frame # LCD continues to advance one number each time SW4 closes and then reopens.

DISASSEMBLY HIGHLIGHTS:

Locations of left-hand threads: screw holding rewind fork

Settings for disassembly: AF/M switch in AF position (to remove front plate)

Precautions:

1. Do not remove PCB-B or the AF motor, Fig. 22. Removing these parts will disturb the adjusted position of the CCD.

2. If you're going to remove both the aperture ring and the clutch unit of the mirror box, Fig. 22, the aperture-ring return spring will unwind. Before removing the aperture ring, install a 1.5mm screw into the threaded hole at the front of the aperture-control unit, Fig. 23 (you can use the screw you removed to take out the winding-base plate, front of camera, Fig. 14). The screw then blocks the shoulder of the gray aperture-control gear, Fig. 28, and prevents the spring from unwinding. The proper initial tension is 6.7 turns. However, Minolta recommends replacing the aperture-control unit, Fig. 28, rather than attempting to retension the spring. A replacement aperture-control unit comes with the locking screw in place, holding the proper amount of initial tension.

Sequence:
1. battery holder
2. bottom cover (2 machine screws at front, short self-tapping screw at rewind end, 4 long self-tapping screws)
3. top cover (2 machine screws holding nameplate, nameplate, 2 long self-tapping screws by eyelens, short self-tapping screw at rewind end, short screw with flat head holding strap eyelet cover, strap eyelet cover, screw and top-cover retaining plate from inside handgrip assembly) — eyelens frame loose
4. unsolder 5 hot-shoe wires from flex, Fig. 30
5. remove handgrip assembly — 1 screw from bottom of camera, Fig. 3
6. remove insulating tape, top of flex, Fig 2.

Note: To protect the body LCD from scratches or solder, place a piece of tape over the top of the LCD. Be sure to clean the top surface of the body LCD before replacing the top cover (the top-cover window prevents you from reaching the body LCD).

7. remove remote-terminal cover (front, rewind side)
8. remove right and left front decorator panels (held by double-sided tape)
9. remove front plate (2 screws — machine screw goes on wind side) — AF/M switch loose.

Operation notes:
1. To operate with the top cover removed, solder a jumper wire across the main switch contacts as shown in Fig. 5. The main switch is now in the sound position.
2. If you're testing with a power supply, you can connect the power-supply leads to the battery connections at the bottom, Fig. 3 (red is + battery). But install the empty battery holder to open SW30. Or use the Minolta power-supply adapter (2072-1221-75), a battery holder with leads that you can connect to a power supply. Use a power supply that has a capacity of at least 2 amps.
3. With the top cover removed, you can release the shutter without first closing SW1; just close SW2, Fig. 5. In the AF mode, the shutter will then release even if the lens hasn't selected the proper focus setting. However, if you close SW1 before you close SW2, Fig. 5, the lens must reach the focus position before the shutter will release.
4. With the front plate removed, the AF/M switch closes (manual focus). To operate the AF, hold open the AF/M switch, Fig. 7, and close SW1, Fig. 5. The lens should then move to the focus setting.

Sequence to remove LPCB-A (Upper flex):
Note: PCB-A does not have to be removed to take out the mirror box. See "Sequence to remove mirror box."
1. remove rewind gear E set, Fig. 9 (2 screws)
2. lift out rewind gears, Fig. 9 (long gear goes on rewind side)

Note: The new style has a different type of winding-base plate (the same as the 5000 model). Both of the rewind gears are then the same length. See, "Revised Sections."

3. separate SPC1, Fig. 10, from eyepiece frame (1 screw)
4. remove 3 black screws and lift aside control-key base as shown in Fig. 10
5. lift out white rewind gear, Fig. 10 (black gear will stay in place)
6. unsolder wires (Fig. 10, Fig. 30)
   —
   — black from lens-signal flex connector (2 black if camera has PCB-C)
   — brown from lens-signal flex connector (if circuit has PCB-C)
   — red and black piezo wires
   — gray (AF/M SW)
   — both connections of SPC2 shield lead
   — all wires from section of PCB-A that folds on top of IC3
   — orange (REW SW2)
   — gray (SW2) — 2 gray if circuit uses PCB-C, Fig. 32
   — black (ground for release-contact plate)
7. unsolder SW0 and SW1 contacts from PCB-A, Fig. 11
8. desolder AEL SW tab from PCB-A, Fig. 11
9. unsolder wires, front rewind side —
   — green and yellow (aperture keys)
   — purple and black (flash sync)
10. remove light-shield plate for finder LCD, Fig. 4 (held by double-sided tape — be careful to avoid distorting plate)
11. remove 2 screws and lift aside in-finder holder, Fig. 13
12. desolder 5 connections of lens-signal flex from PCB-A, Fig. 10
13. remove 2 screws holding body LCD, Fig. 5
14. lift aside body LCD to reach screws holding flexible pressure plate, Fig. 12
15. remove flexible pressure plate and pressure pad (3 screws)
16. separate upper section of 2-layer flex connector (PCB-B), Fig. 14, from locating pins
17. disengage 2 front tabs of shutter-speed keys from base-plate slots, Fig. 11

Note: Bow up the center of the shutter-speed key switches until the tabs clear the slots.

18. free flex from under plastic tab, Fig. 11
19. separate lower section of 2-layer flex connector (PCB-A) from locating pins
20. remove flex base plate, Fig. 14 (provides a flat base for flex connector)
21. remove pressure plate and

pressure pad of 3-layer flex connector, Fig. 7 (2 screws)
22. separate control-grip contact holder from contact-pin base plate, Fig. 3 (held by double-sided tape)
23. separate center section of 3-layer flex connector (PCB-A) from between other 2 sections (PCB-B & PCB-D)
24. lift off PCB-A, Fig. 15

Reassembly highlights:

1. As you seat PCB-A, first pass the two tabs (wrapped with insulating tape) through the slots at the sides of the pentaprism. If you try to position the tabs after mounting the flex, the components mounted to the tabs may break loose.
2. Temporarily mount the in-finder holder, Fig. 12, with its two screws (holds down the flex to keep the tabs in place).
3. Seat the flex base plate, Fig. 14, over the locating pins.
4. Fit the lower section of the 2-layer flex connector (PCB-A) over the locating pins.
5. Mount the wind side of the PCB-A. Pass the flex under the AEL SW tab and under the plastic tab, Fig. 11. Seat the tab at the back of the shutter-speed keys through the base-plate slot. Then bow up the center of the shutter-speed keys to fit the front tabs through the two front base-plate slots.
6. Clean all the contacts of the 2-layer flex connector. Then seat the upper section (PCB-B) over the locating pins. Replace the pressure pad and the flexible pressure plate, Fig. 11. The short screw for the flexible pressure plate goes to the back of the camera.
7. Seat the body LCD and route the brown REW SW1 wire as shown in Fig. 9.
8. Clean all contacts of the 3-layer flex connector. Pass the center section (PCB-A) between the other two sections and replace the pressure pad and pressure plate, Fig. 7. You'll probably need new double-sided tape to hold the control-grip contact holder, Fig. 3.
9. When you resolder the red and black piezo wires, make sure the wires pass to the inside of the support post, Fig. 10.
10. Route the yellow SW4 wire (long wire) as shown in Fig. 6 — behind the tab on the shutter-speed key unit, under the lug on the flexible pressure plate, to the front of the body LCD, and under the base-plate lug. If the circuit uses PCB-C, route the long gray wire with the yellow wire.
11. Route the purple and black sync wires (coming from the bottom of the camera) as shown in Fig. 6.
12. Route the black ground wire of the release-contact plate between the two black plastic pins, Fig. 5. The orange, yellow, and gray wires pass through the slot to the back of the plastic pins.

Sequence to remove winding-base plate set (wind-gear unit):

Note: The winding-base plate set does not have to be removed to take out the mirror box. Also, you can remove the winding-base plate set without taking off the flex PCB-A. If PCB-A is still installed, proceed as follows (if you've removed PCB-A, just perform steps 13 and 14).

1. unsolder wires —
   — yellow (SW4)
   — brown (REW SW1)
   — orange (REW SW2)
   — gray (SW2 — 2 gray wires if circuit uses PCB-C)
   — black (ground for release-contact plate)
2. desolder SW0 and SW1 contacts from PCB-A, Fig. 11
3. desolder AEL SW contact from PCB-A, Fig. 11
4. remove 2 screws holding body LCD, Fig. 5
5. lift aside body LCD to reach screws holding flexible pressure plate, Fig. 11
6. remove flexible pressure plate (3 screws) and pressure pad
7. separate upper section of 2-layer flex connector (PCB-B), Fig. 14, from locating pins.
8. disengage 2 front tabs of shutter-speed keys from base-plate slots (bow up center of shutter-speed keys)
9. free flex from under plastic tab, wind end of camera, Fig. 11
10. separate lower section of 2-layer flex connector (PCB-A) from locating pins
11. remove flex base plate, Fig. 14
12. lift aside PCB-A (wind side) to uncover winding-base plate set
13. remove 4 screws holding winding-base plate set — 1 short machine screw (usually white) and 1 long black self-tapping screw, Fig. 14, 1 long white self-tapping and 1 black self-tapping, Fig. 11
14. lift out winding-base plate set, Fig. 17 — note loose collar, Fig. 16 (later models) and loose changeover gear

Reassembly highlights:

1. In later models, a compression spring goes under the changeover gear, Fig. 16. Also, the brass tube through the center of the changeover gear has a lip at one end; the lip goes to the top of the changeover gear.
2. The light-shield plate, Fig. 16, should be cemented at one corner. If you remove the light-shield plate and the spool gear, first seat the spool gear on top of the take-up stool; fit the end of the slip spring into one of the narrow slots at the top of the spool. Cement the light-shield plate at one corner.
3. Prepare the winding-base plate set for installation as follows:
   a. Move the aperture-return lever, Fig. 17, counterclockwise to the latched position.
   b. Turn gear A, Fig. 17, counterclockwise until it stops (SW4 open).
   c. Turn the cam gear, Fig. 17, clockwise until it stops (comes against the pin).
4. Position the yellow and orange wires as shown in Fig. 17.
5. Make sure the support collar, Fig. 16, is in place as shown (except in early version that doesn't use a separate collar).
6. Seat the winding-base plate set. Rotate the sprocket until the unit seats fully.

Sequence to disassemble winding-base plate set:

Note: The winding gears will be loose once you separate the base plates. However, there's no gear timing.

1. disconnect the end of spring

3324, Fig. 18
2. disconnect the short end of spring 3075 from the tab of the lower winding base plate, Fig. 18
3. remove 3 screws from top of winding-gear set
4. lift off upper winding base plate, Fig. 18

Note: The winding-base plate set is completely different in the latest design. The new winding-base plate set in the 7000 is the same as in the 5000. See section 3 for the design of the winding-base plate set.

Reassembly highlights:

1. Position the sector gear as shown in Fig. 18.
2. Position the long end of spring 3075 against the upper gear pivot as shown in Fig. 18.
3. Seat the upper winding base plate and replace the three screws.
4. Connect the short end of spring 3075 against the tab of the lower winding base plate.
5. Connect the end of spring 3324 to the rewind slide.

Sequence to remove mirror box:

Note: PCB-A and the winding-base plate set do not have to be removed. If PCB-A is in place, perform steps 1 through 14. If you've removed PCB-A, skip to step 15.

1. remove rewinding gear E set, Fig. 9 (2 screws)
2. lift out 2 rewinding gears, Fig. 9
3. separate SPC1 from holder above eyelens, Fig 10 (1 screw)
4. remove 2 screws holding body LCD
5. lift aside body LCD to reach flexible pressure plate, Fig. 11
6. remove flexible pressure plate (3 screws) and pressure pad, Fig. 11
7. separate upper section of 2-layer flex connector (PCB-B) from locating pins
8. remove pressure plate for 3-layer flex connector (2 screws) and pressure pad, Fig. 7
9. unsolder wires from rewind side front —
   — yellow and green aperture-key wires
   — purple and black sync wires
10. remove light-shield plate for finder LCD, Fig. 4 (held by double-sided tape — be careful to avoid distorting the plate)
11. remove 2 screws and lift aside in-finder holder, Fig. 13
12. unsolder wires from PCB-A, rewind side —
    — all wires connecting to lens-signal flex connector (1 black in current style, 2 black and 1 brown in early style)
    — gray AF/M switch
    — both connections of SPC2 shield
13. unsolder 5 connections of lens-signal flex from PCB-A
14. unsolder wires from section of PCB-A that folds on top of IC3
    — orange (SW40)
    — yellow (SW400)
    — purple and black (flash sync)
15. unsolder connection between PCB-B and PCB-D, front rewind side, Fig. 7
16. unsolder red and black M1 wires, front wind side, Fig. 31
17. unsolder connection between PCB-B and camera-body pin (SLS switch), front wind side, Fig. 6

Note: The solder connection between the two sections of PCB-B (front wind side, Fig. 6) has no electrical function; it just holds down the upper section of PCB-B (section with motor transistors).

18. unsolder wires from bottom of PCB-B
    — black, red, yellow, white, and purple shutter-block wires
    — red and black (operating-battery leads)
    — yellow (lithium-battery contact)
    — blue (battery-reset switch SW30)
19. desolder pins 1, 2, and 6 of DC/DC converter from PCB-B, Fig. 31
20. remove screw at bottom of PCB-B, Fig. 3
21. lift bottom of PCB-B to reach screw holding DC/DC converter — remove screw
22. peel back tape at bottom of camera and free wires from tripod-socket plate
23. remove tripod-socket plate (5 screws — note position of long self-tapping screw at back, rewind side)
24. remove front screw (white) holding winding-base plate set, Fig. 14
25. remove 2 upper mirror-box screws (1 one each side of eyelens from back)
26. remove 4 front mirror-box screws
27. lift out mirror-box assembly, Fig. 22

Reassembly highlights:

1. Before replacing the mirror box, set:
   a. the shutter-charge lever on the mirror box, Fig. 25, to the down (released) position (disengage the latch, Fig. 25, by pushing it toward the front of the mirror box).
   b. the aperture-charge lever to the charged position (push the aperture-charge lever from right to left, Fig. 19, until it latches.
2. Be careful to avoid pinching wires as you seat the mirror box.
3. Fit the tabs of PCB-A (wrapped with insulating tape) into the slots at the sides of the pentaprism. Temporarily install the in-finder holder, Fig. 10, to hold down PCB-A.
4. Seat the DC/DC converter and replace the screw. Solder the three pins of the DC/DC converter and the wires to the bottom of PCB-B. Route the wires as shown in Fig. 3 so they don't interfere with the winding motor M1.
5. Replace the tripod-socket plate. The two machine screws go to the front of the camera. The long self-tapping screw goes to the back, rewind side.
6. Use double-sided tape to stick the wire-holding tape to the bottom of the camera, Fig. 3. Place the wire-holding tape behind the tripod-socket plate with the adhesive side up. Then route the wires along the back of the tripod-socket plate and between the locating pins on the body casting. The wire sequence (starting from the back of the camera) is: purple, small black, large black, red. The wires should now be held in position by the adhesive of the wire-holding tape. Finally, fold the wire-holding tape on top of the wires as shown in Fig. 3.
7. Solder the body pin (SW SLS) to PCB-B, Fig. 6. Then solder

the corner of the upper PCB-B section (with motor transistors) to the lower section.

Note: The solder connection serves to hold down the upper folded section of PCB-B. If the solder land comes off, you can use a piece of double-sided tape between the two sections of flex.

8. Clean the contacts of the 3-layer flex connector. The section of PCB-A fits between the other two sections. Replace the pressure pad and the pressure plate.
9. Clean the contacts of the 2-layer flex connector. Seat the flex base plate, Fig. 14. Fit the lower section of the flex connector (PCB-A) and then the upper section (PCB-B) over the locating pins. Replace the pressure pad and the flexible pressure plate (small screw to back of camera).
10. Replace the body LCD. Route the brown REW SW1 wire to the back of the body LCD as shown in Fig. 9.
11. Route the yellow SW4 wire (long wire) as shown in Fig. 6 — behind the tab on the shutter-speed keys, under the lug of the flexible pressure plate, to the front of the body LCD, and under the lug on the winding base plate. If the circuit uses PCB-C, route the long gray wire the same way.
12. Solder the wires to the front and top of the circuit. Note the routing of the black and purple sync wires in Fig. 6. Resolder PCB-B to PCB-D, Fig. 7. Mount the control-grip contact holder, Fig. 3, with double-sided tape.
13. Remove the in-finder holder, Fig. 8, to resolder the lens-signal flex connector.

Sequence to disassemble mirror box:

Note: The mirror box doesn't have to be removed to take out the aperture ring, Fig. 24. If you're going to remove both the aperture ring and the clutch unit, Fig. 22, be sure to install the locking screw for the aperture-control unit. You can reach the threaded hole for the locking screw through the front-plate clearance cutout (under the front section of PCB-B).

1. remove bayonet mount (6 screws — use acetone if necessary)
2. remove lens-locking pin, Fig. 24
3. remove lens-lock lever and spring, Fig. 24
4. remove top section of ring roller, upper right, Fig. 24 (E-clip)
5. disconnect end of aperture subspring, Fig. 24
6. remove aperture ring

Note: Lift the aperture ring at the upper right. Bow the aperture ring slightly outward to free it from the brass roller (lower right). Then slide out the aperture ring to the right in Fig. 24.

7. unsolder red and white aperture-magnet wires, Fig. 24
8. disconnect aperture-return lever from aperture-magnet assembly, Fig. 23 (E-clip)
9. remove clutch unit, Fig. 22 (2 shoulder screws from bottom)
10. unsolder 3 connections of P11 flex connector, Fig. 24
11. remove aperture-control unit, Fig. 22 (3 screws)

Reassembly highlights:

1. Replace the aperture-control unit, the clutch unit, and the aperture magnet, Fig. 22.
2. The aperture ring has a timing punch mark on its front surface. When the aperture ring is fully seated, the punch mark should align with the center pivot of the return gear, Fig. 24. The spring-hooking slot at the top of the ring gear, Fig. 24, should point to the center of the lens opening (for the proper amount of initial tension on the aperture subspring).
3. Before seating the aperture ring, make sure the return gear, Fig. 24, is turned CCW to its stop (further CCW rotation will add tension to the aperture-ring return spring). Do not turn the ring gear in a clockwise direction.
4. Turn the ring gear, Fig. 24, until its spring-hooking slot points to the center of the lens opening.
5. Start the left edge of the aperture ring under the black disc of the ring gear and under the brass disc of the return gear, Fig. 24. Engage the last tooth of the aperture ring (near top) with the ring gear; the timing punch mark on the aperture ring is then slightly CCW of the return-gear pivot (because the aperture ring must later be turned slightly CW to seat fully).
6. Bow the aperture ring outward slightly until you can seat its lower right-hand edge under the brass disc of the guide roller.
7. Rotate the aperture ring slightly CW until it seats fully (stop at underside of aperture ring against end of slot at bottom of mirror box).
8. Check the timing. The punch mark on the aperture ring should align with the pivot of the return gear, and the spring-hooking slot of the ring gear should point to the center of the lens opening.
9. Apply two turns of initial tension to the aperture subspring. Then hook the end of the aperture subspring against the inside edge of the bayonet-ring lug on the mirror-box casting, Fig. 24.
10. Seat the spring for the lens-lock lever (long end up, short end against the outside of the pin on the casting).
11. Seat the lens-lock lever with its edge hooked against the spring end. Turn the lens-lock lever CCW (adding tension to the spring) to the position shown in Fig. 24.
12. Hold the lens-lock lever slightly CCW and install the lens-locking pin. Allow the lens-lock lever to move CW until its edge engages the slot in the lens-locking pin. The parts will now stay in place while you install the bayonet ring.

OTHER DISASSEMBLY NOTES:

1. Shutter
   If the camera uses the old-style shutter, remove the two screws at the back of the aperture. With the new style, remove the E-clips at the front of the shutter, Fig. 20. Then push out the two pins toward the back of the camera. There may be pressure springs under the E-clips (see "Revised Parts, #3"). On reassembly, seat the top of the shutter block first. Route

the shutter wires as shown in Fig. 20.

2. Winding motor M1

Note: You can replace M1 without removing the mirror box or PCB-A.

a. unsolder DC/DC converter pins 1, 2, and 6 from the end of PCB-B, Fig. 31
b. lift the end of PCB-B to remove the screw holding the DC/DC converter
c. unsolder the red and black M1 wires, Fig. 31
d. slightly loosen the setscrew holding the motor gear

Note: Loosen the setscrew around 1/4 turn. More than 1/4 turn may allow the motor gear and spring to separate, requiring additional reassembly time.

e. lift off the motor gear
f. remove the aperture-charge unit, Fig. 26 (2 screws)
g. remove the motor-contact plate (1 screw, bottom)

Note: With the early style, the sprocket spring and the sprocket axis receiver (bushing) will be loose when you remove the motor-contact plate.

h. hold the film-guide roller away from the take-up spool (back of camera) and remove the motor toward the bottom of the camera — note the loose spool gear on top of the motor unit

Note: To reassemble, seat the spool gear on top of the motor (fit the end of the slip spring into one of the narrow grooves). Hold aside the film-guide roller and slide the motor into place from the bottom. When you replace the motor gear, Fig. 26, align the setscrew with the flat side of the motor shaft. Leave 0.2mm clearance between the motor gear and the plate.

3. Body LCD

Remove the clip holding the body LCD (disengage from tabs, front and back). Then lift out the body LCD and the two connectors. Avoid touching the contact surfaces of the connectors. On reassembly, seat the connectors on top of the flex contacts (note that you can see the contacts along two edges of each connector — make sure that one of the contact edges goes against the flex contacts). Then seat the body LCD on top of the connectors and replace the clip. Test by shorting pin 55 of IC3, Fig. 29, to ground (SW1 closed or during 10-second timer). All the LCD segments should appear.

4. PCB-D

a. remove back-cover latch (1 screw) — brush for SW RC stays with latch assembly
b. remove contact holder, back of aperture, Fig. 9 (3 screws)
c. remove black screw holding remote terminal, Fig. 19
d. loosen screw holding contact-pin base plate from bottom (end of screw passes into slot in remote terminal)
e. free section of flex with RC contacts from end of camera body (held by double-sided tape)
f. remove 2 short screws holding PCB-D (near IC5, Fig. 20)
g. remove PCB-D

Note: As you lift out the flex, tilt the DX contact assembly to free its tabs (right-hand side, Fig. 19) from the body-casting slot. Pass the terminal strip for the data-back contacts through the slot at the bottom of the casting.

Reassembly:

a. Pass the flex strip with the data-back contacts through the slot at the bottom of the body casting. As you seat the flex, hook the tabs of the DX contact assembly, Fig. 19, through the casting slot.
b. Be careful to avoid starting the short flex screws (by IC5, Fig. 20) at an angle. If the screws aren't started straight, they'll strip the casting threads.

5. Rewinding base plate

a. disconnect 3-layer flex connector, Fig. 7
b. unsolder 4 wires at front, rewind side, Fig. 7
c. separate control-grip contact holder from contact-pin base plate (held by double-sided tape), Fig. 3

You can now lift the top-rewind side of PCB-A far enough to reach the two screws holding the rewinding base plate. Remove the two screws and lift out the complete assembly. To clean REW SW3, remove the rewind fork (left-hand screw).

6. DC/DC converter

a. desolder 6 pins from PCB-B (indicated by circled numbers in Fig. 31)
b. lift end of PCB-B, Fig. 3
c. remove DC/DC converter (1 screw)

REVISED PARTS:

1. Flexible PC board, A set (PCB-A). Three types:

(1) PCB-A 2072-0401-01 (first type). Has a hybrid IC PCB-C 2072-0451-01, Fig. 8, held by double-sided tape to the top of IC2. Both PCB-A and PCB-C will be supplied as replacement parts until the present supply is gone. When the parts are no longer available, use the new-style PCB-A 0401-02 — see (3) below for interchangeability.

(2) PCB-A 2072-0401-81 (second version). Uses a slightly different PCB-C that eliminates Q17 and R41 in Fig. 32. Neither PCB-A (81) nor PCB-C (81) is supplied as a replacement part. If PCB-C is defective, you can install the first type PCB-C (01). Do not connect Q17 and R41 to the circuit (blue and yellow wires in Fig. 31). If PCB-A is defective, use 0401-02 as a replacement.

(3) PCB-A 2072-0401-02 (current version). Eliminates PCB-C (revised IC1, additional components on the flex), Fig. 30. Can be used to replace either the first type (01) or the second type (81). However, if you install the new-style PCB-A (02) in a camera that originally had the first type (01), additional modifications are needed. Use release-contact plate 2072-0423-01 rather than 02 (see #2 below for differences). Use winding-base plate set 2072-0303-03 (see #5 below for differences).

Note: A replacement PCB-A 0401-02 comes with the main switch constantly closed (for factory-test purposes). Before installing the flex, cut off the main-switch connection as shown on page 30

2. Release-contact plate

Fig. 16 shows the first version (also the current version) 2072-0423-01. The second version (02) has resistor R50 connected to the SW0 contact, Fig. 27.

Resistor R51 connects between the SW1 contact and PCB-A. Fig. 30 You can modify the 01 unit by adding the resistors to correct a static problem. If the customer complains of erratic LCD indications — but you can't duplicate the malfunction in the shop — static electricity is probably the cause. Minolta supplies the two resistors — R50 (9423-1056-61, 1/6W, 1M) and R51 (9422-1036-63, 1/8W, 10K). To modify:

a. Cut off the tips of the SW0 and SW1 contacts (the tips that solder to PCB-A), Fig. 27. Leave around 1mm of the SW1 tip and around 0.5mm of the SW0 tip for soldering.

b. Solder R50 to the SW0 contact as shown in Fig. 27.

c. Solder a wire (around 20mm long) to the SW1 contact, Fig. 27.

d. Solder one end of R51 to the SW1 land on PCB-A, Fig. 30.

e. Solder the wire to the other end of R51.

f. Solder the other lead of R50 to the SW0 land on PCB-A Fig. 30.

g. Make sure that R50 is not over the hole in the body (the hole receives a locating pin on the top cover).

3. Shutter block

The first shutter block has screw threads at the two lower corners; two screws from the back of the camera hold the shutter block. If the screws are too tight, they can distort the shutter block enough to cause an erratic 1/2000. The new-style shutter block 2072-0201-05 has nonthreaded bushings at the lower corners. Two pins 2072-1099-01 pass through the back of the camera and through the bushings. E-clips and pressure springs hold the other ends of the pins. The new-style pins 2072-1099-02 (identified by having two grooves rather than one groove) are held by E-clips, Fig. 20 (pressure springs eliminated). If you're installing the new-style shutter block in a camera that originally had the old style, also order the two pins and the two E-clips.

Note: The original shutter block has only one set of sync contacts. However, this version was replaced early in the production by the shutter having two sets (X1 and X2). It's unlikely you'll encounter the early shutter.

4. Finder LCD, mounting

Fig. 12 shows the early style (identified by the light-shield tape); Fig. 2 shows the current style. Modify if the finder LCD has missing segments (indicating poor contact to PCB-A). Order the following parts to revise: new-style pressure spring 2072-5073-81, Fig. 13 (the new style is 0.4mm thick, the old style is 0.3mm thick) and pressure rubber 2072-5082-81. To modify:

a. Remove clip 5072, Fig. 12, by unhooking one end (pressure plate 5074, Fig. 12, is loose).

b. Remove and discard the black light-shield tape, Fig. 12.

c. Separate the flex from the LCD (cemented).

Note: Use liquid freon or alcohol as a solvent. Try to avoid letting the solvent flow down, into the LCD. If the solvent damages the LCD, also replace LCD2 2072-4246-01. However, be sure to use enough solvent to avoid damage to the A flex (it's better to damage the LCD with too much solvent than the A flex by using too little solvent).

d. Clean the cement from the flex and the LCD.

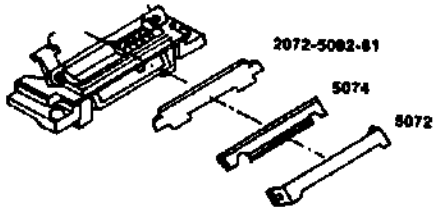
e. If the mirror of the in-finder holder, Fig. 13, is loose, cement it in place.

f. Install the new-style pressure spring, Fig. 13.

g. Install the in-finder holder with the two screws.

h. Align the flex contacts with the LCD contacts and hold the flex in place.

i. Seat the pressure rubber, pressure plate, and clip as shown here.



j. Check by closing SW1 to turn on the LCDs. Then short pin 55 of IC3, Fig. 29, to ground. All LCD segments should appear (all 8's). If not, the flex contacts may not be perfectly aligned with the LCD contacts.

5. Upper winding-base plate, changeover parts

Old style	New style
upper winding-base plate 0303-01	upper winding base plate 0303-03
sprocket axis set 0352-01	sprocket axis set 0352-02

Note: The new-style sprocket axis set has a spring 3095 on top of the sprocket shaft (under the changeover gear, Fig. 16).

changeover gear 3009-03	changeover gear 3009-05

Note: You can distinguish between the two changeover gears by the depth of the lower shoulder — 1.9mm in the old style, 1.2mm in the new style, Fig. 16.

collar 9446-01	collar 9446-02

Note: Collar 9446 fits through the center of the changeover gear, Fig. 16. The old style is a straight tube. The new style has a lip at one end.

Also, the old-style winding-base plate set has a brass support collar mounted to the corner of the lower winding-base plate. The new style has a loose support collar, Fig. 16. The sprocket spring and the sprocket axis receiver (bushing) on the motor-contact plate have been deleted in the revision (these parts are loose if you remove the motor-contact plate, Fig. 26). However, it's not necessary to remove the parts if you revise to the new style.

Revision procedures:

In most repairs, the revision is of concern only if you replace PCB-A. If you install the current PCB-A (0401-02) in a camera that originally had the first type (0401-01), also replace the upper winding-base plate (0303-01 to 0303-03). The changeover fork on the new-style upper winding-base plate is different (because of the revisions to the changeover parts listed above). However, it's not necessary to replace all of the changeover parts.

You can instead just order the new-style upper winding-base plate (03). Then transfer the changeover fork and spring from the old upper winding-base plate to the new upper winding-base plate. The new-style upper-winding base plate will then work with the old-style changeover parts.

6. Motor power transistors
   Revised for greater current capability. If you encounter transistor damage from overheating, replace Q12 and the defective transistor, Fig. 31. To prevent the problem from reoccuring, Minolta suggests adding diodes to the power transistor (diode — 9361-1631-11). In the winding-motor circuit, connect a diode between the emitter of Q4 (cathode) and the cathode of D2, Fig. 31, and a diode between use collector of Q1 (anode) and the emitter of Q3. In the AF motor circuit, connect a diode between the collector of Q12 (anode) and the emitter of Q14. Also connect a diode between the emitter (cathode) and collector of Q13.
7. Upper winding-base plate
   The upper winding-base plate has been completely revised in the new style. The new-style 7000 now uses the same type of upper winding-base plate as used in the 5000. See SECTION 3 (5000 variations) for a description of the winding-base plate and the modifications.

TROUBLESHOOTING:

Behavior without operating batteries: shutter won't release, no LCDs
Behavior without lens: no aperture display (LCD shows "-")
Maximum current draw:
- — leakage (SWM off) — 100 microamps (normally within 25-70 microamps)
- — leakage (SWM on, sound position) — 200 microamps
- — meter on — 115 ma
- — during autofocus — 1.2A
- — M1 running, transporting film — 2.2A

COMMON REPAIRS:

1. Shutter curtains out of position
   or deformed, caused by operator during film-loading. You can sometimes "pop" the curtains into place by using heat from a hair-dryer.
2. Lens continues seeking proper focus position, caused by dust on AF sensor or submirror. Blowing out the dust frequently corrects the problem.

AUTOFOCUS, TROUBLESHOOTING & REPAIRS:

Repairs that affect the position of the CCD require the I/O tester for readjustment. These are:
- — replacing PCB-B
- — replacing M2 (AF motor)
- — adjusting the autofocus.

Most AF repairs don't require disturbing the CCD. Minolta supplies the most frequently needed components for PCB-B — the power transistors, diodes, IC9. You can replace these components without removing PCB-B. PCB-B must be replaced for a defective IC6, IC7, or IC8. If the malfunction affects only the autofocus, you can check the following to determine if the camera should be sent to Minolta:

1. Remove the pressure plate for the 3-layer flex connector, Fig. 7, and clean all the contacts.
2. If the lens will move and focus in one direction but not the other, IC9 or one of the M2 power transistors is probably the problem.
   a. Lens moves toward infinity but not toward the minimum distance — check Q12 and Q13, Fig. 31. Also check IC9 pin soldering (3, 14, & 15). See "Checking major systems, #7."
   b. Lens moves toward minimum distance but not toward infinity — check Q11 and Q13, Fig. 31. Also check IC9 pin soldering (1, 2, & 13). See "Checking major systems, #7."
3. If the lens moves, but won't select the focus and the green focus LED won't turn on, check the DC/DC converter at pin 1 (13V, SW1 closed). The problem may be a defective DC/DC converter or poor solder between pin 1 and PCB-B, Fig. 31.
4. If the lens won't move when you close SW1, check:
   a. SW1. Check continuity between the SW1 connection on PCB-A, Fig. 30, and ground. You should get direct continuity when you close SW1. Also check the solder at the SW1/flex connection.
   b. SW AF/M. Check continuity between the gray SW AF/M wire, Fig. 30, and ground. SW AF/M should be open in the AF mode. If you measure continuity, the switch is constantly closed or the gray wire is shorted to ground.
   c. AF motor M2. Disconnect the red and black M2 leads from the flex, Fig. 31, and remove the lens. Connect around 5V between the wires. M2 should run, and the AF coupler should rotate. If you reverse the polarity, M2 should run in the opposite direction.

Note: Replacing M2 will disturb the CCD position.

5. If the autofocus operates, but won't select proper focus (image remains out of focus even though green LED turns on), the EZ adjustment may be incorrect (factory adjustment, requiring I/O tester). If the autofocus continues to seek the proper focus position, the problem may be dirt on the AF sensor (bottom of mirror box through slit) or the submirror (behind reflex mirror).

Tips for troubleshooting without disassembly:

1. Missing LCD segments
   Check both the body LCD and the finder LCD. If the finder LCD has missing segments, but the body LCD is o.k., the problem is poor contact between the flex (PCB-A) and the finder LCD2. See "Revised Parts, #4" for repair. If the body LCD has missing segments, but the finder LCD is o.k., the problem is poor contact betwen the flex (PCB-A) and the body LCD. Remove the body LCD1 to clean the connectors and the flex contacts.
2. Shutter won't release
   a. Turn off the main switch. Then remove and reinstall the battery holder with fresh batteries. The body LCD

should turn on (standby mode, Fig. 5). No LCDs — check the power supply ("Troubleshooting steps for specific problems, #1").
b. If you do get the standby display, turn on the main switch. Then touch or partially depress the release button. The metering LCDs (shutter speed, f/stop, Fig. 1) should turn on. If you get only the shutter-speed LCD with the lens installed (aperture LCD shows "--"), check the lens-signal flex connector, Fig. 10, for poor solder.
c. If the metering LCDs are o.k., watch the body LCD as you fully depress the release button. If the metering LCDs turn off within 0.5 second, the circuit is receiving the release signal; check the motor circuit ("Troubleshooting steps for specific problems, #8"). If the metering LCDs remain on, the circuit isn't receiving the release signal; check the release circuit ("Troubleshooting steps for specific problems, #9").

3. No autofocus, aperture LCD shows "--" with lens installed
Clean the contacts at the back of the lens and the BL contacts at the top of the lens mount (1, 3, 4 in Fig. 4).
4. 1/2000 erratic
See "Revised Parts, #3."
5. Shutter blades damaged
Check to see if the customer knows how to load film. If the leader isn't aligned with the red mark, it could interfere with the shutter blades. See "Revised Parts, #3" before replacing the shutter block.
6. You can check the metering and release switches without disassembly. If the metering LCDs won't turn on when you push the release button part way, push in the AEL button (back of camera, wind side). Or short the metering pin of the remote terminal, Fig. 31, to the ground pin. If the metering LCDs then turn on, the circuit is o.k.; check the release-contact assembly, Fig. 16, for poor ground (black wires). If the shutter won't release when you fully depress the release button, short the remote-terminal release pin to the ground pin, Fig. 31. If the shutter then releases, the problem is in the release-contact assembly, Fig. 16, or in PCB-C.
7. Poor contact in the flex connectors can cause winding, shutter, or autofocus failure. For autofocus failure, try cleaning the 3-layer flex connector, Fig. 7. For a failure of the winding motor, try cleaning the 2-layer flex connector, Fig. 12.
8. If the camera switches to rewind mode part way through the film roll, check to see if the problem also occurs without film. If so, try rotating the film fork a partial turn and repeat the test. Problem occurs only with film (or rotating the rewind fork corrects the problem without film) — check the REW SW3 unit ("Troubleshooting steps for specific problems, #4"). Problem just as likely to occur with or without film — check the winding-completion signal ("Troubleshooting steps for specific problems, #3").
9. If the shutter releases when you open the back cover — or if the camera won't advance the film to the first frame when you close the back cover — check the back-latch switch RC.
10. For exposure complaints, check the ISO setting (the owner may have accidentally overriden the DX coding of the film).
11. If the plastic (front, wind side) is deformed, one of the motor transistors has overheated. To repair, see "Revised Parts, #6." Also check for battery drain ("Troubleshooting steps for specific problems, #18").
12. For battery drain, make a quick initial test by measuring the leakage current before and after disconnecting the DC/DC converter outputs (unsolder pins 1 and 2), Fig. 31. If you still get excessive leakage after disconnecting the pins, replace the DC/DC converter. If not, see "Troubleshooting steps for specific problems, #18."

CHECKING MAJOR SYSTEMS & QUICK TESTS:

1. DC/DC converter
Initial test for electronic failures (check after pulling bottom cover, Fig. 3). Measure the pin voltages, Fig. 31.
Typical values with 6V applied:

Pin	SWM off	SWM & SW1 on
1	0	13
2	4	6
3	5	0
4	6	5.5
5	0	0
6	0	0

2. LCD clock
Initial test for erratic LCD indications. Without closing the main switch, check for the sine-wave signal at one lead of XL2, Fig. 13. No signal — XL2 or IC3 defective. You can replace XL2 individually. However, if replacing the XL2 doesn't correct the problem, it may be necessary to replace the complete flex (PCB-A).
3. Master clock
Initial test if the LCD shows only the standby mode and the shutter won't release. Jumper across the main switch, Fig. 5. When you close SW1, the sine-wave signal should appear at the XL1 test point, Fig. 31 (you can reach the test point through a clearance hole in the front cover). No signal — XL1 or IC1 defective, or poor contact in 3-layer flex connector. You can replace XL1 individually, Fig. 15. However, if IC1 is defective, it's necessary to replace the compelte flex PCB-A. Also check for the square-wave clock signal at the clock test point, Fig. 30. If you get the sine wave at XL1, but no clock signal, IC1 is probably defective. See, "Troubleshooting steps for specific problems, #5."
4. Shutter block (shutter block or mirror box removed)
a. Connect a power supply (around 2V) between the red (+) and white shutter wires.
b. Charge the shutter by pushing up the shutter-charge lever, Fig. 20. When you release the shutter-charge lever, the curtains should remain in the charged position. If not, the first-curtain magnet is defective.
c. Connect the negative power-supply lead to the yellow shutter wire. Push up and then

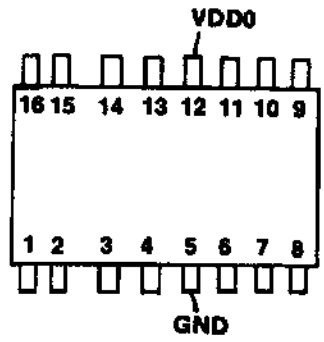
release the shutter-charge lever. The shutter should stay open until you disconnect the power supply. If not, the second-curtain magnet is defective.
d. To check the sync contacts, hold open the shutter (step c). Then check for continuity between the purple shutter-block wire and ground. Both sync switches should be closed, and you should measure direct continuity.

5. A/D converter
Initial test for no change in the LCD metering values and no change in the auto exposure. With the main switch and SW1 closed, you should get the A/D dual-ramp signal at the A/D test point, Fig. 29. The slope should change as you change the light striking SPC1. If not, check C6, Fig. 8, poor solder. If C6 is o.k., it may be necessary to replace PCB-A.

6. PCB-C
Check for the following:
a. Shutter won't release. Check at the gray SW1 wire to PCB-C, Fig. 32. The voltage should switch L (0V) when you close SW2 (if not, check SW2 and the gray-wire connections). Then check between the gray wire at the collector of Q18, Fig. 32, and ground. The voltage should switch from over 5V to around 4.25V when you close SW2. If not, check at the brown wire to PCB-C. With SW1 closed, a pulse signal should appear at the brown wire. When you close SW2, the voltage should switch H (5.5V). No pulse — IC1 defective. Pulse signal appears at brown wire, but collector of Q18 won't switch — PCB-C defective (Q18).
b. Shutter won't stay open on bulb. Check at the orange PCB-C wire for VDD1 (6V), Fig. 32. No voltage — check orange-wire solder connections. Check at the green PCB-C wire, Fig. 32; the voltage should switch L when you close SW2. If not, check the green-wire connections (if the connections are o.k., IC1 may be defective). If the voltage at the green wire does switch L, yet the shutter won't stay open on bulb, Q19 may be defective (replace PCB-C).
c. Rewind stops within 8 seconds (won't completely rewind film). Check at the blue wire to PCB-C, Fig. 32, during rewind (with film). You should get a pulse signal. If not, check REW SW3. If you do get the pulse at the blue wire, the problem may be PCB-C. Check Q17 and the wiring to PCB-C (yellow, blue, black), Fig. 32.
d. Shutter won't release when you short the remote-terminal release pin to the ground pin (and won't release when you close just SW2 without first closing SW1). Check at the orange wire from IC1 pin 26, Fig. 32. The voltage should switch to 0V when you close SW1. If not, check the orange-wire solder connections and R47, Fig. 32, for an open or poor solder.

7. IC9
Since it's necessary to disconnect PCB-B from PCB-A to reach IC9, troubleshooting is normally by symptom or substitution rather than by pin tests. If either M1 or M2 will move in one direction but not the other, first check the motor transistors, Fig. 31; if they're o.k., IC9 is probably the problem. You may also be able to detect overheating by visually inspecting IC9. It's possible, however, to check IC9 by signal injecting — injecting a pulsating signal into an input pin and testing the output pins with a scope or logic probe. To reach IC9, separate the wind side of PCB-B from the front of the mirror box, Fig. 6, as follows:
a. disconnect the 2-layer flex connector
b. unsolder the red and white aperture-magnet leads, Fig. 31
c. unsolder the 3 connections of the P11 flex connector, Fig. 31
d. desolder PCB-B from the SLS pin, Fig. 6
e. separate the top of PCB-B from the front of the mirror box (IC9 is on the back of the flex, facing the mirror box).
The drawing shows the IC9 pin numbering as viewed from the back of PCB-B. To check, inject a 5V P-P signal into an input and check the signal at the output pins.

Signal into	Output at
10	9 (1V P-P), 4 (5V P-P)
6	7 (1V P-P), 11 (5V P-P)
8	11, 4 (5V P-P)
14	15, 3 (1V P-P)
2	1, 13 (1V P-P)
16	13, 3 (1V P-P)



Troubleshooting steps for specific problems:

1. No standby display when you install battery holder, shutter won't release

   Battery voltage
   Check between the red and black battery wires, bottom of camera, Fig. 31. No voltage — battery contacts or wiring.

   DC/DC converter
   Check at pin 2, main switch off, Fig. 31. You should measure around 4.6V. No voltage — DC/DC converter defective. Also check the solder between pin 2 and PCB-B.

   D12, D14
   Check at the emitter of Q5, Fig. 31, main switch off. You should measure around 5.3V. No voltage — D12 or D14, Fig. 31, open or poor solder.

2. LCD does not show metering values when SW1 closes, shutter won't release

Note: Check to see if the metering values turn on, Fig. 1, when you close the AEL switch. If so, the problem is in the release-contact assembly — check the black ground wires for poor solder. If not, check the following:

Main switch
Remove the top cover. Then short between the two main-switch contacts, Fig. 5, and close SW1. If the metering values turn on, the problem is poor contact between the top-

cover brush and the main-switch lands.

Master clock
See, "Checking major systems, #3."

Flex connector
Check at the end of R27 indicated in Fig. 31; the voltage should switch low when you close SW1. If not, try cleaning the 2-layer flex connector.

Note: If cleaning the flex connector doesn't correct the problem, IC1 may be defective. Before replacing PCB-A, check the solder at IC1 pins 26, 44, 46.

Q5
Check at the Q5 collector, Fig. 31. You should get the VCC1 voltage when you close SW1.

3. Camera switches to rewind mode part way through film roll (occurs with or without film — may be erratic or camera may run 1.2 seconds before switching to rewind mode)

Note: For a quick check, you can disconnect the yellow wires (SW4, SW400), Fig. 30. Then momentarily close the reset switch. If the circuit stays in wind mode (doesn't go back to rewind mode), the problem is SW4 or SW400. Check as described here. If the circuit does switch back to rewind mode, skip the SW4 and SW400 checks.

SW4 (winding-completion switch)
Check between the yellow SW4 wire and ground, Fig. 30, after the camera has switched to rewind mode. If you measure direct continuity, SW4 may have remained closed (verify by disconnecting the yellow SW4 wire — then check between the yellow wire and ground). If SW4 remains closed, check SW4 ("Switch Tests and Adjustments") and the wind-gear unit (mechanical bind, dirt, disconnected spring).

SW400
Disconnect the yellow SW400 wire, Fig. 30. Check the continuity between the yellow wire and ground. With the mirror down, SW400 should be open. If SW400 remains closed, check for bent switch contacts, Fig. 23, or a short between the yellow wire and ground.

DC/DC converter
See, "Checking major systems, #1."

Winding motor M1
Clean the motor-contact plate, Fig. 26, and check for a bind in M1.

Aperture-return lever
Check for a mechanical bind or a disconnected spring, Fig. 23.

4. Camera switches to rewind mode during film advance (normally occuring only with film — problem may be erratic or may occur 1.2 seconds after wind starts)

Note: The problem normally indicates that IC1 is receiving the rewind signal from rewind switch 3. Transistor Q15 should be on during film advance, preventing the pulse signal from reaching the IC. If Q15 doesn't turn on, the pulse signal reaches the IC during film advance. Check:

Q15
Check Q15, Fig. 30, for a base-to-emitter short or emitter-to-collector open.

R31
Open or poor solder, Fig. 30.

Rewinding base plate set
Check for poor solder to brown and blue wires.

5. Mirror returns part way (each time you close SW2, mirror moves up and then returns about half way)

SW4
Poor contact or out of adjustment (see, "Switch Tests and Adjustments"). Also check the SW4 solder connections (yellow wire, Fig. 30).

6. Mirror locks up

SW400
Try operating the release switch SW2 several times. If the mirror will return after several operations (7 times after mirror locks up) — and will then lock up the next time you close SW2 — check SW400, Fig. 23, for poor contact or poor solder (yellow wire). Check by disconnecting the yellow SW400 wire, Fig. 30. Then test continuity between the yellow wire and ground; with the mirror up, you should measure direct continuity. No continuity — SW400 defective.

SW40
Disconnect the orange SW40 wire, Fig. 30. Then check continuity between the orange wire and ground. With the mirror up, you should measure direct continuity. If not, check SW40, Fig. 23, for poor contact or poor solder (orange wire).

7. Shutter does not release — metering LCDs turn on when you close SW1 and turn off when you close SW2, but motor doesn't run to raise mirror (metering LCDs stay off — to again turn on LCDs, operate the reset switch and then close SW1)

Power to motor transistors
Check for battery voltage between the red and black VDD0 wires, Fig. 31. No voltage — check solder.

Winding motor M1
Check by disconnecting the red and black M1 leads, Fig. 31. Connect around 5V across the motor (negative to black wire). The motor should run. If you connect the negative lead to the red wire, the mirror should rise. If the motor doesn't run, the motor may be defective or the motor-contact plate, Fig. 26, may be dirty.

Flex connector
Clean the contacts of the 2-layer flex connector, Fig. 11.

DC/DC converter
See, "Checking major systems, #1."

R18
Check for an open or poor solder, Fig. 6.

IC9
Check solder at pins 4, 9, 10.

Motor transistors
Check Q1, Q2, Q3, and Q4, Fig. 31.

8. Shutter won't release, metering LCDs stay on when you close SW2
Check by shorting the gray SW2 wire, Fig. 30, to ground. If the shutter then releases, the problem is poor contact in SW2.

PCB-C
Check by shorting the gray wire at the collector of Q18 to ground, Fig. 32. If the shutter then releases, yet the release switch SW2 checks o.k., PCB-C is the problem (Q18 open, poor solder to gray wires).

IC1
Check for poor solder to pin 56. If o.k., it may be necessary to replace PCB-A.

9. Rewind stops before completely rewinding film (stops in 8 seconds)

Q15
Check Q15, Fig. 30, for an emitter-to-collector short.

Rewinding base plate
Check the solder connections, Fig. 30.

REW SW3
See "Switch Tests and Adjustments."

Note: You can check REW SW3 and Q15 by measuring the voltage at the blue wire from the rewinding base plate during film rewind. You should get a pulsating voltage. If the voltage stays low, REW SW3 or Q15 may be defective.

PCB-C
See, "Checking major systems, #6."

10. Both curtains travel together

2nd curtain magnet SL5
Check the coil between the yellow and red shutter-block wires, Fig. 31.
Approximate coil resistance — 115 ohms. Or check by applying 2V across the coil ("Checking major systems, #4").

Voltage to shutter block
Check for VDD0 (around 6V) to the red shutter-block wire, Fig. 31. No voltage — check red-wire solder connections.

IC1, IC4, flex connector
Check at the yellow-wire connection to SL5, Fig. 31. The signal should pulse low when you release the shutter. If not, clean the 2-layer flex connector. Other possibilities — IC4 defective (or poor solder at pin 17) or IC1 defective (or poor solder at pins 31, 40). If the shutter block and the 2-layer flex connector are o.k., it may be necessary to replace PCB-A.

11. No fast shutter speeds (none faster than 1/30)

1st curtain magnet SL4
Check the coil between the white and red shutter-block wires, Fig. 31. Approximate coil resistance — 115 ohms. Or check by applying 2V across the coil ("Checking major systems, #4").

IC1, IC4, flex connector
Check at the white-wire connection to SL4, Fig. 31. The signal should pulse low when you release the shutter. If not, clean the 2-layer flex connector. Other possibilities — IC4 defective (or poor solder at pins 16, 30) or IC1 defective (or poor solder at pin 39).

12. 1/2000 erratic

Shutter block
If the camera has the old-style shutter block, try loosening the screws at the back of the aperture. Snug up (but don't tighten) the screws. Then recheck 1/2000. If 1/2000 is no longer erratic, replace the shutter block with the new style ("Revised Parts, #3). If 1/2000 is still erratic — or if the shutter block is already the new style — check the shutter magnets for dirt or oil contamination. If o.k., you may still have to replace the shutter block.

13. Winding motor M1 runs as soon as you install battery holder (main switch off)

DC/DC converter
See, "Checking major systems, #1").

IC9
Pins 5 and 6 may be shorted or IC9 may be defective. See, "Checking major systems, #7."

14. Diaphragm always stops down fully

Aperture magnet SL3
Check the coil between the red and white wires, Fig. 31.
Approximate resistance — 32 ohms. Or connect 2V across the coil; the magnet should hold.

IC1, IC4, flex connector
Check the signal at the white aperture-magnet wire, Fig. 31, as you release the shutter. The signal should pulse low. If not, clean the 2-layer flex connector. Other possibilities — IC1 defective (or poor solder at pin 38), IC4 defective (or poor solder at pins 18, 31). If either IC is defective, replace PCB-A.

Aperture-control unit
Check for a broken stop pawl, Fig. 23.

16. Diaphragm always fully open in low light, stops down fully in other light conditions

Optical encoder PI1
Check at the center terminal of the PI1 flex connector, Fig. 31. You should get a sine-wave signal when you release the shutter. No signal — poor solder to the PI1 flex connector or defective PI1 (replace aperture-control unit).

Flex connector
Clean the 2-layer flex connector, Fig. 12.

C14
Check for poor solder or a short (C14 is on the PCB-A tab covered with insulating tape, next to IC4, Fig. 15).

C21
Check for poor solder or a short, Fig. 15.

PCB-A
IC1 defective (or poor solder pin 43) or IC4 defective (or poor solder pins 5, 9, 10, 27).

17. Camera functions properly for around 20 seconds after you turn on the main switch or push the program-reset switch — then LCD shows only standby mode, and shutter won't release

The problem indicates a failure of the power-up reset circuit, Fig. 34, located on the PCB-A tab next to IC1 (covered with insulating tape, Fig. 15). Possibly the tab was forced into place after seating PCB-A, causing a component to break loose. Remove the insulating tape and retouch the solder connections (Q16, C3, resistors). Also check for poor solder to IC1 pin 25.

18. Battery drain

a. Excessive leakage current, main switch off
(1) Check IC9 and the motor

diodes. Disconnect the M1 wires, Fig. 31; if the leakage decreases, check D11. Disconnect the red VDD0 wire, Fig. 31; if the leakage decreases, replace IC9.
(2) If the tests in (1) don't change the leakage current, disconnect the 2-layer flex connector Fig. 12. If the leakage decreases, the problem is PCB-A. A leakage of around 60ma normally indicates a defective IC4. If the leakage is under 300 microamps, the problem could be C9, XL2, IC2, or IC3. You can replace C9 and XL2 (check by disconnecting while measured w/2 layers attached) disconnecting while measuring current draw). You can check IC2 and IC3 by disconnecting the pins to VDD1; however, if either IC is defective, it's necessary to replace PCB-A.
(3) If the tests in (1) and (2) don't change the leakage current, the problem is in the power supply. Disconnect pin 2 of the DC/DC converter, Fig. 31. If the leakage decreases, check Q5, D12, and D14. No change — replace the DC/DC converter.
b. Excessive leakage current, main swith on
(1) Disconnect the 3-layer flex connector and desolder the connection between PCB-B and PCB-D, Fig. 7. If the leakage decreases, the problem is IC5, Fig. 20. Check for a short between pins 13 and 14. No short — replace PCB-D (IC5 defective).
(2) If the test in (1) doesn't change the leakage current, check the DC/DC converter. If o.k., IC6 may be defective (requires replacing PCB-B, a factory repair).
c. Excessive current draw, SW1 closed:
(1) Disconnect the 2-layer flex connector, Fig. 12. If the current decreases, the problem is PCB-A.
(2) Disconnect pins 1 and 2 of the DC/DC converter, Fig. 31. If the current decreases, the problem may be PCB-B (IC6, 7, or 8). No change — replace the DC/DC converter.
d. Excessive current draw while transporting film
Check the wind-gear unit, Fig. 18, for dirt or dry lubrication.

PART NUMBERS (Frequently replaced parts):

Prefix for parts numbers: 2072

Flexible PC board-A set (PCB-A) — see, "Revised parts, #1"

Top-cover window for body LCD — 1018-01

Top cover (Maxxum 7000) — 0136-02

Note: For the revised 7000, use top cover 0136-03. The revised 7000 has the new-style wind-gear unit (the same as the 5000). See "Revised parts, #7."

Battery contact set — 0124-01

Shutter — 0201-05

Aperture-stop magnet SL3 —00472-03

Aperture-control unit — 0256-02

Note: The new-style aperture-control unit 0256-02 uses countersunk screws. If you install the new style with countersunk screw holes in a camera that originally had the old style (0256-01), also replace the two screws. (2072-9004-01)
Winding motor M1 — 0424-02
Lithium battery — 9375-1363-01

Flexible PC board-D set (PCB-D) — 0404-01

Rewinding base plate set — 0330-01

Components:

XL2 (quartz crystal for LCD) — 9873-4161-01

DC/DC converter — converter PC board set 0450-02

IC9 — 2072-4309-01

Q1, Q2, Q11, Q12 — 9362-2462-02

Q3, Q4, Q13, Q14 — 9363-1463-02

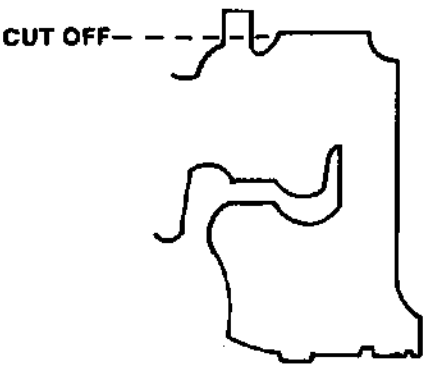
Q5 — 9363-1461-02

Q15 — 9362-1032-01

Note: When ordering transistors, give the camera model, part number, and part description. For example: Maxxum 7000/Q5/9363-1461-02. If Minolta doesn't have the number ordered, they will substitute a transistor that's interchangeable.

OTHER COMMENTS:

1. The tape over the key switches, Fig. 2, serves as a dust-protector. You can use any cellophane tape as a replacement.
2. To replace the lithium battery, remove the battery plate (end of camera body, 6 screws).
3. Minolta supplies the double-sided tape on a large roll — #9384-2190-50.
4. You can remove the focusing screen from inside the mirror box without disassembly (disengage the latch).
5. If you replace the flex PCB-A, be sure to cut off the tab as shown here. The tab has a contact strip that keeps the main switch constantly closed.



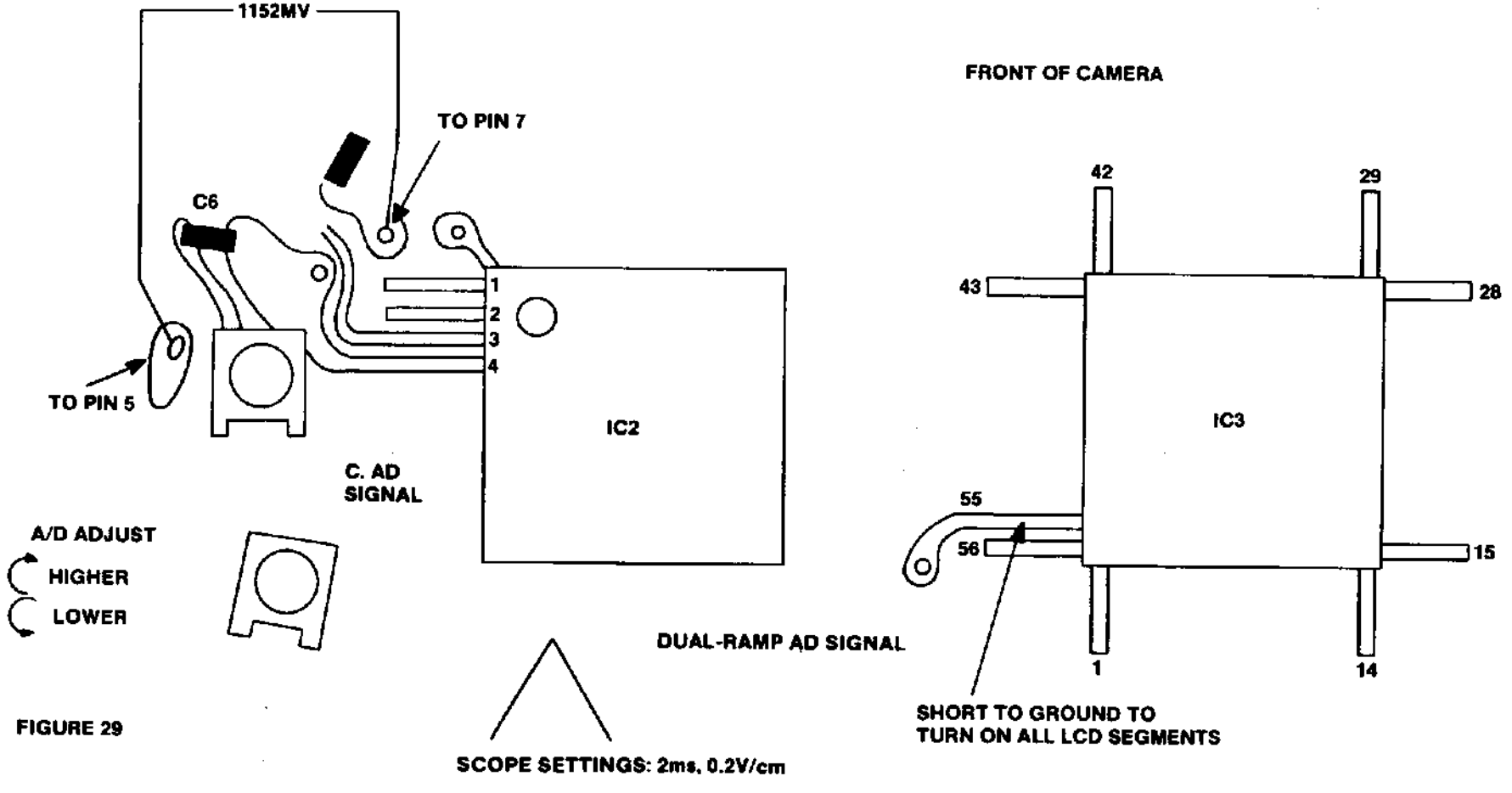

1152MV
TO PIN 7
C6
TO PIN 5
1
2
3
4
IC2
C. AD
SIGNAL
A/D ADJUST
HIGHER
LOWER
DUAL-RAMP AD SIGNAL
SCOPE SETTINGS: 2ms, 0.2V/cm
FRONT OF CAMERA
42
29
43
28
IC3
55
56
15
1
14
SHORT TO GROUND TO
TURN ON ALL LCD SEGMENTS

FIGURE 29

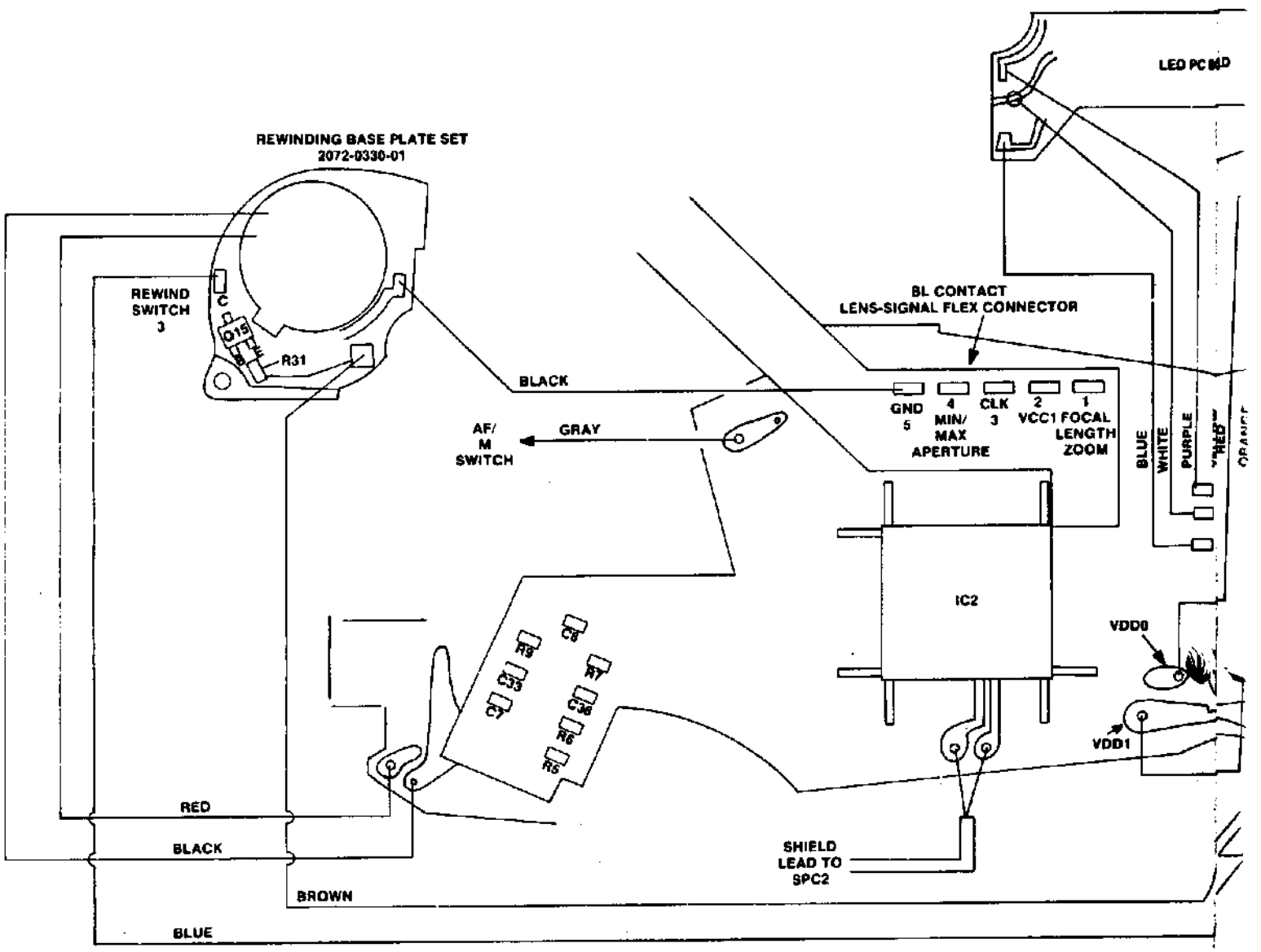
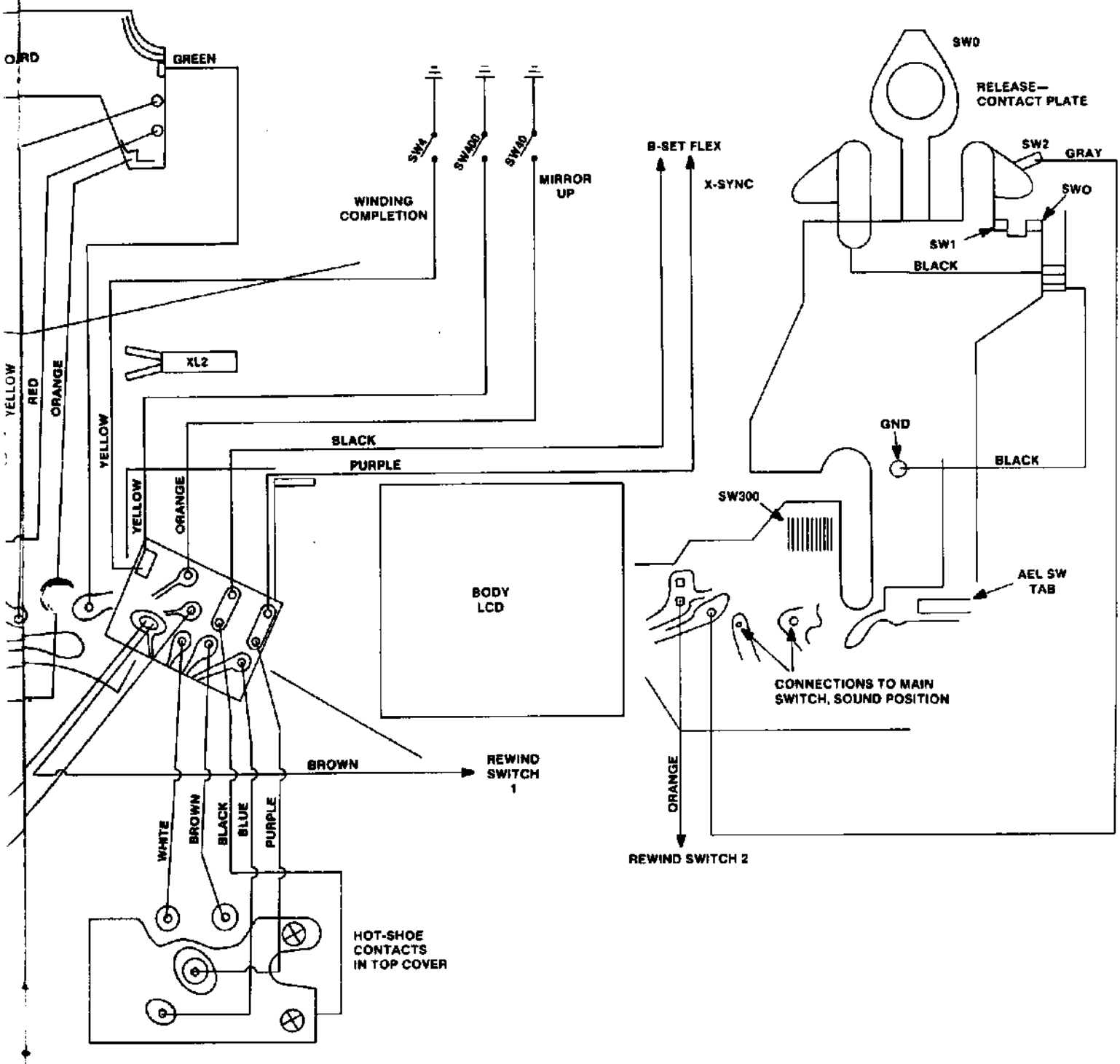

REWINDING BASE PLATE SET
2072-0330-01
REWIND
SWITCH
3
R31
BL CONTACT
LENS-SIGNAL FLEX CONNECTOR
BLACK
GND
5
4
MIN/
MAX
APERTURE
CLK
3
2
VCC1
1
FOCAL
LENGTH
ZOOM
AF/
M
SWITCH
GRAY
BLUE
WHITE
PURPLE
IC2
VDD0
VDD1
SHIELD
LEAD TO
SPC2
RED
BLACK
BROWN
BLUE

FIGURE 30


GREEN
SW4
SW400
SW40
WINDING COMPLETION
MIRROR UP
B-SET FLEX
X-SYNC
SW0
RELEASE—CONTACT PLATE
SW2
GRAY
SW0
SW1
BLACK
XL2
YELLOW
RED
ORANGE
YELLOW
BLACK
PURPLE
YELLOW
ORANGE
GND
BLACK
SW300
BODY LCD
AEL SW TAB
CONNECTIONS TO MAIN SWITCH, SOUND POSITION
BROWN
REWIND SWITCH 1
WHITE
BROWN
BLACK
BLUE
PURPLE
ORANGE
REWIND SWITCH 2
HOT-SHOE CONTACTS IN TOP COVER

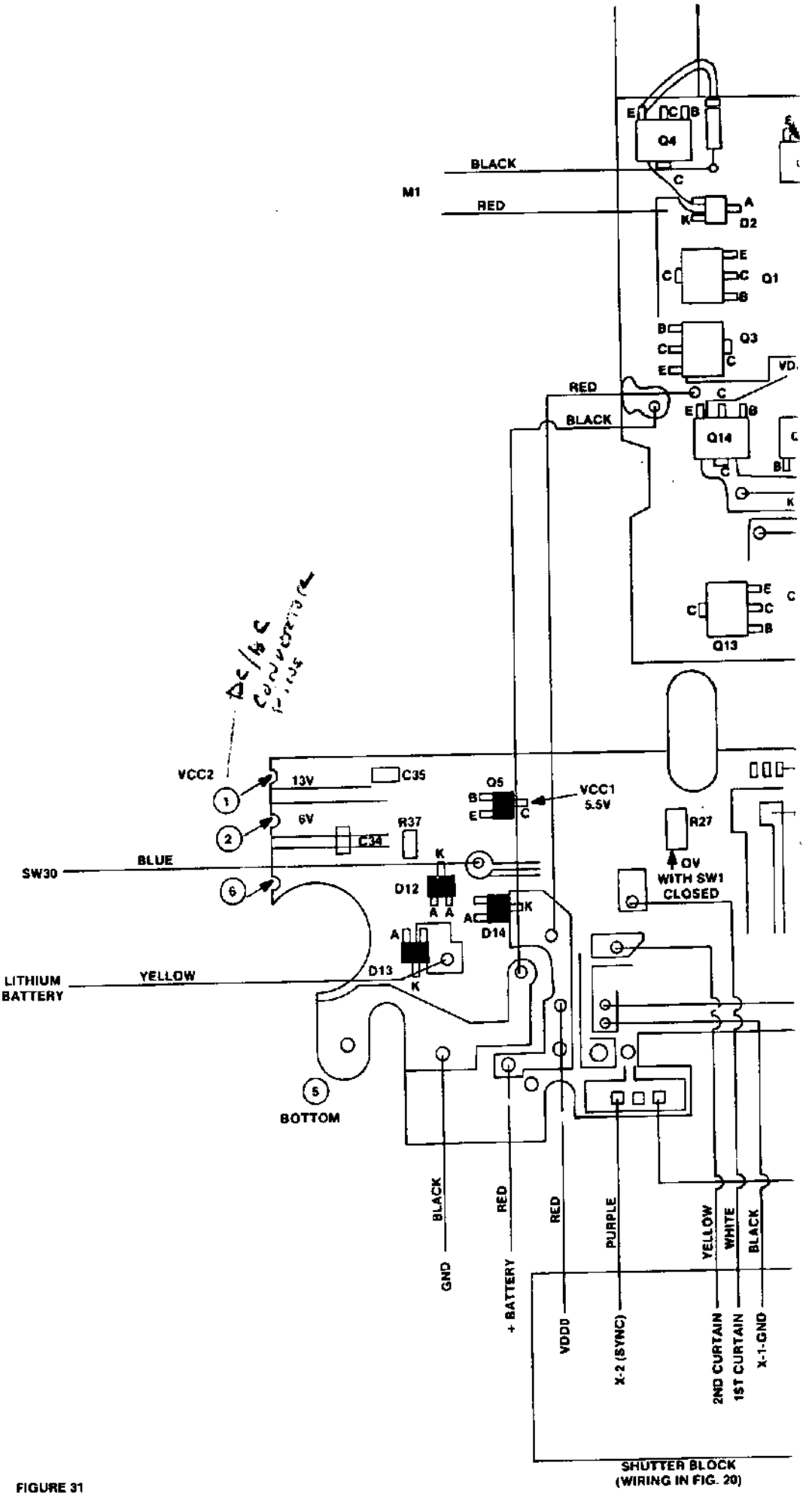
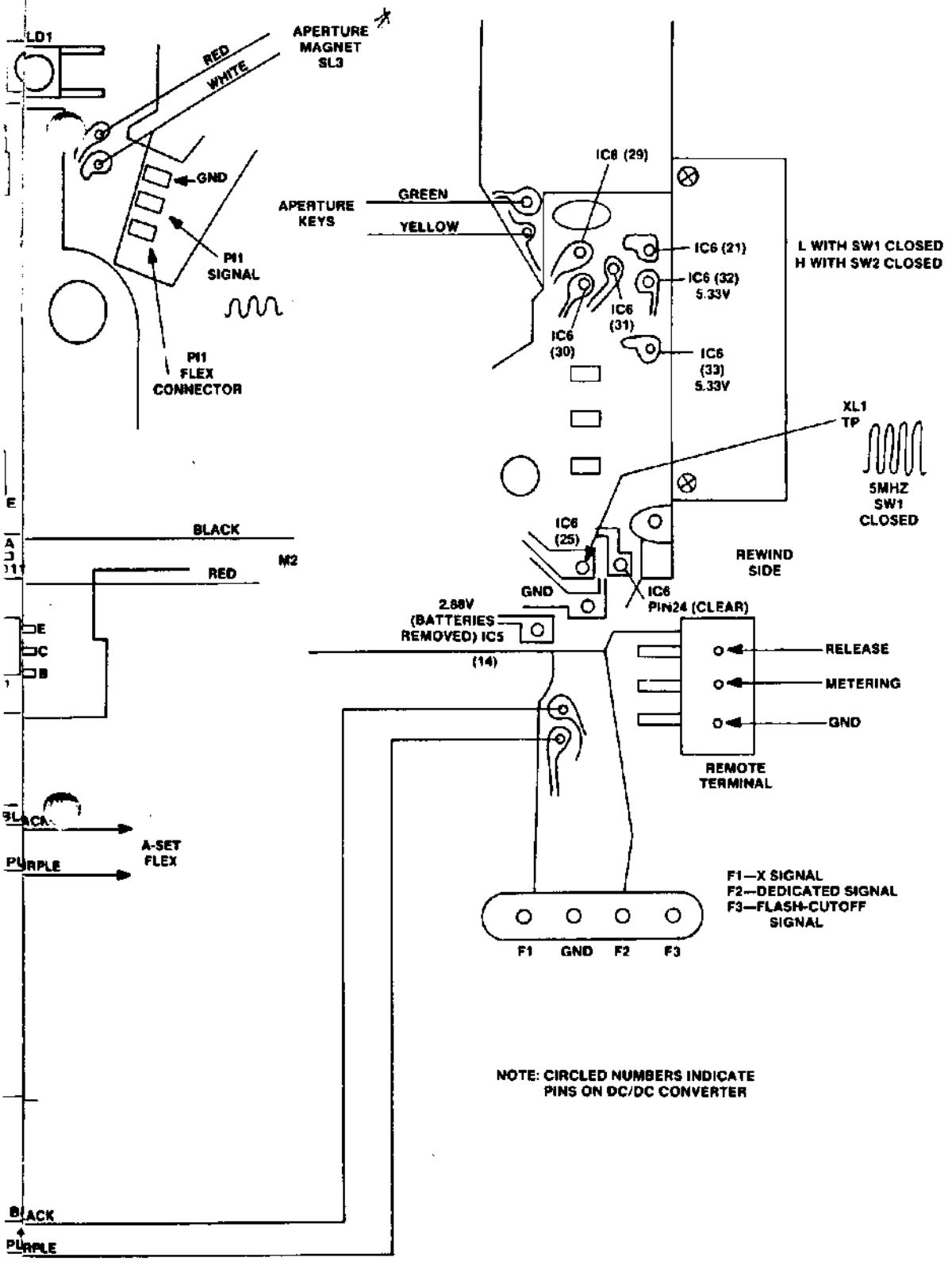

Q4
BLACK
M1
RED
D2
Q1
Q3
RED
BLACK
Q14
Q13
VCC2
13V
C35
6V
C34
R37
Q5
VCC1
5.5V
R27
0V
WITH SW1
CLOSED
SW30
BLUE
D12
D14
D13
LITHIUM
BATTERY
YELLOW
BOTTOM
BLACK
GND
RED
+ BATTERY
RED
VDD
PURPLE
X-2 (SYNC)
YELLOW
2ND CURTAIN
WHITE
1ST CURTAIN
BLACK
X-1-GND
SHUTTER BLOCK
(WIRING IN FIG. 20)

FIGURE 31


LD1
APERTURE MAGNET SL3
RED
WHITE
GND
PI1 SIGNAL
PI1 FLEX CONNECTOR
APERTURE KEYS
GREEN
YELLOW
IC8 (29)
IC6 (21)
IC6 (32) 5.33V
IC6 (31)
IC6 (30)
IC6 (33) 5.33V
L WITH SW1 CLOSED
H WITH SW2 CLOSED
XL1 TP
5MHZ SW1 CLOSED
IC6 (25)
REWIND SIDE
GND
IC6 PIN24 (CLEAR)
2.88V (BATTERIES REMOVED) IC5 (14)
BLACK
RED
M2
E
C
B
RELEASE
METERING
GND
REMOTE TERMINAL
A-SET FLEX
PURPLE
F1—X SIGNAL
F2—DEDICATED SIGNAL
F3—FLASH-CUTOFF SIGNAL
F1
GND
F2
F3
NOTE: CIRCLED NUMBERS INDICATE PINS ON DC/DC CONVERTER

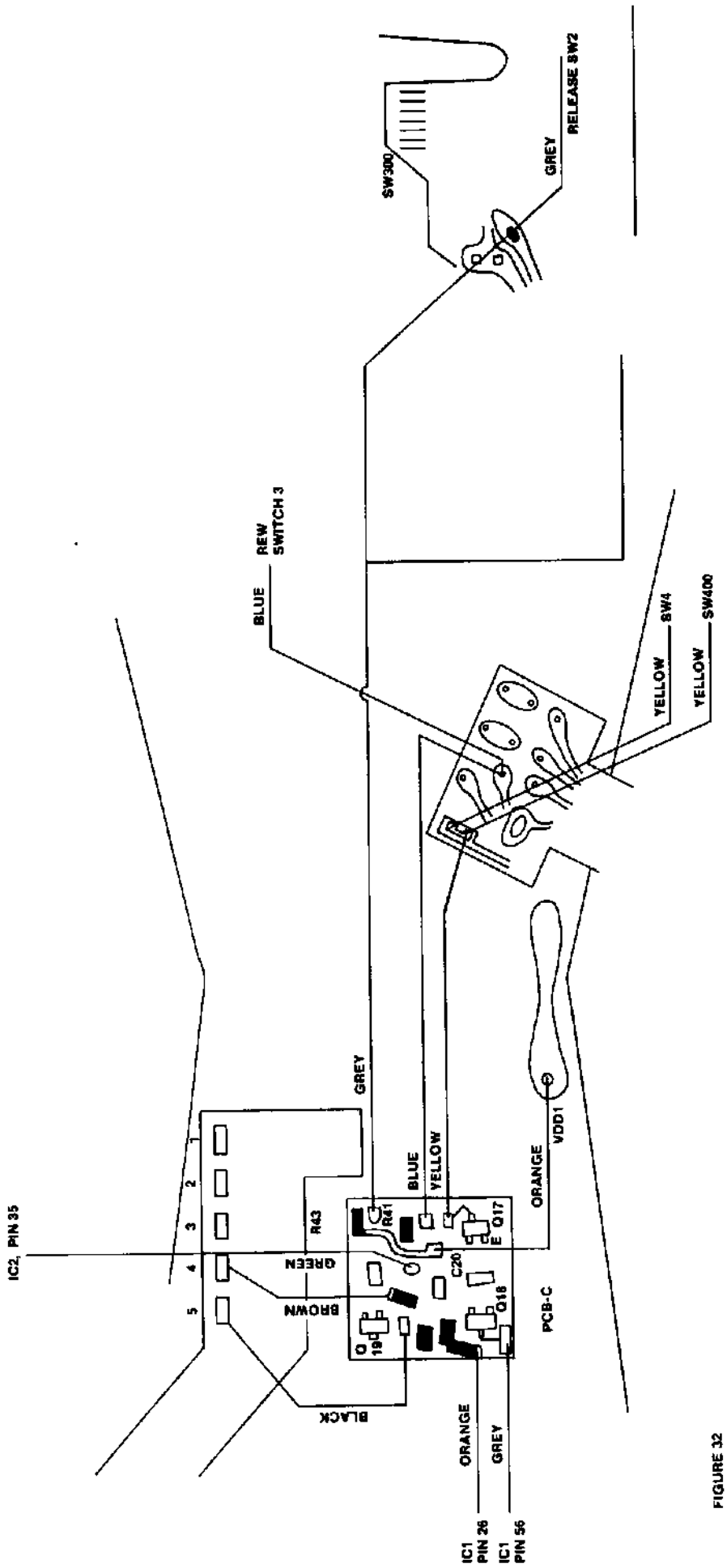

SW300
GREY
RELEASE SW2
BLUE
REW
SWITCH 3
YELLOW
SW4
YELLOW
SW400
GREY
BLUE
YELLOW
ORANGE
VDD1
IC2, PIN 35
R43
R41
Q17
C20
Q18
Q19
GREEN
BROWN
BLACK
PCB-C
ORANGE
GREY
IC1
PIN 26
IC1
PIN 56

FIGURE 32

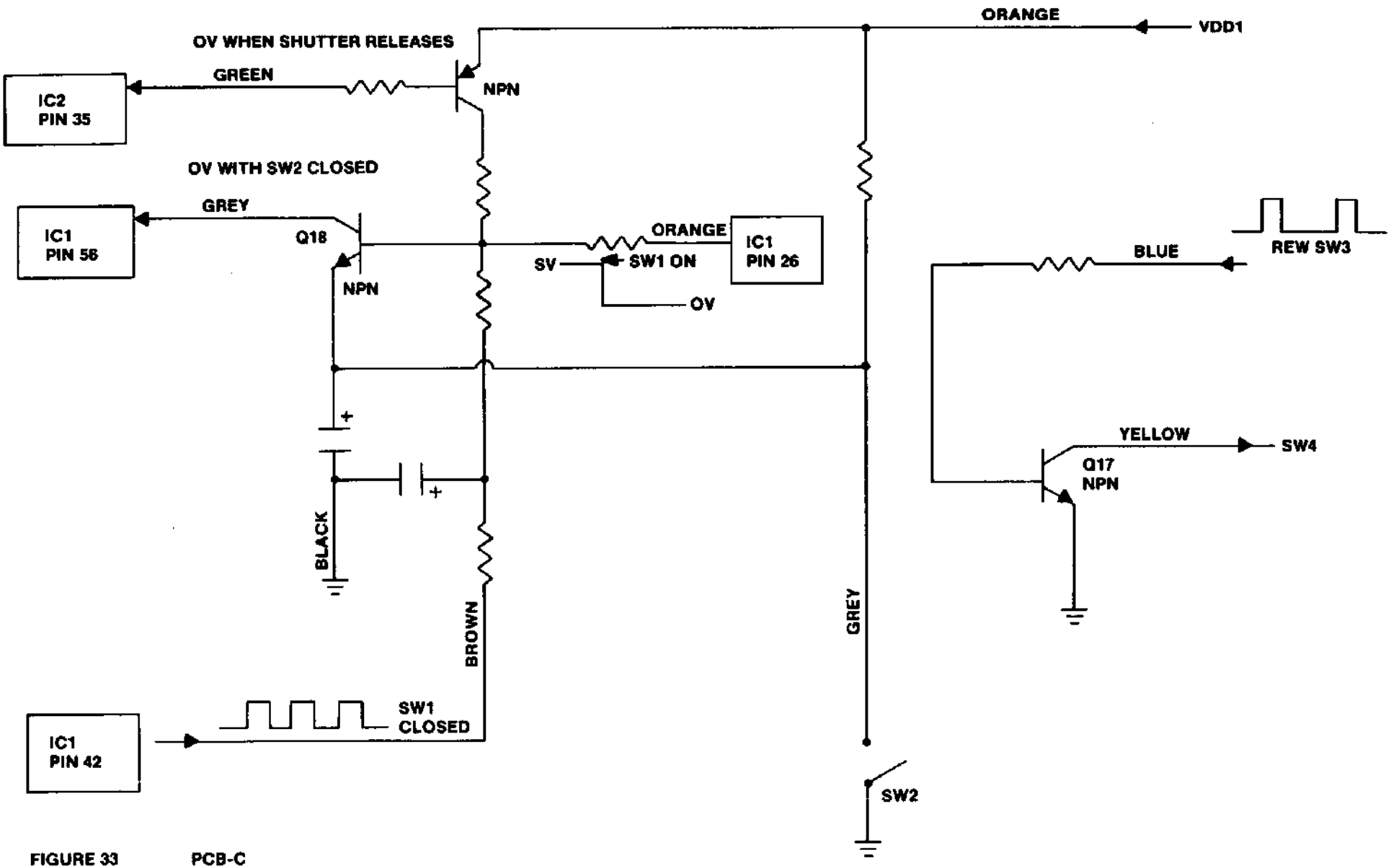


FIGURE 33 PCB-C

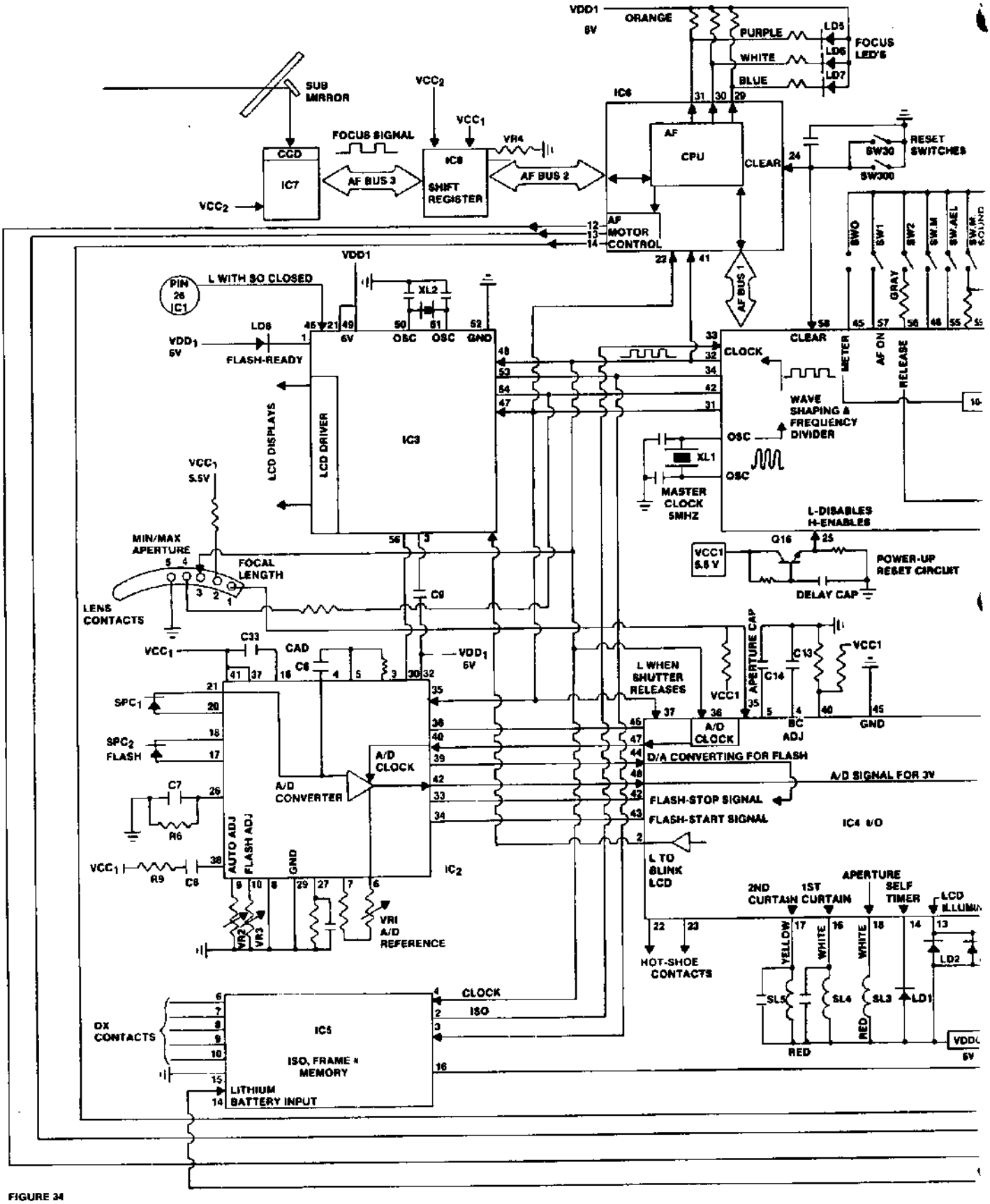
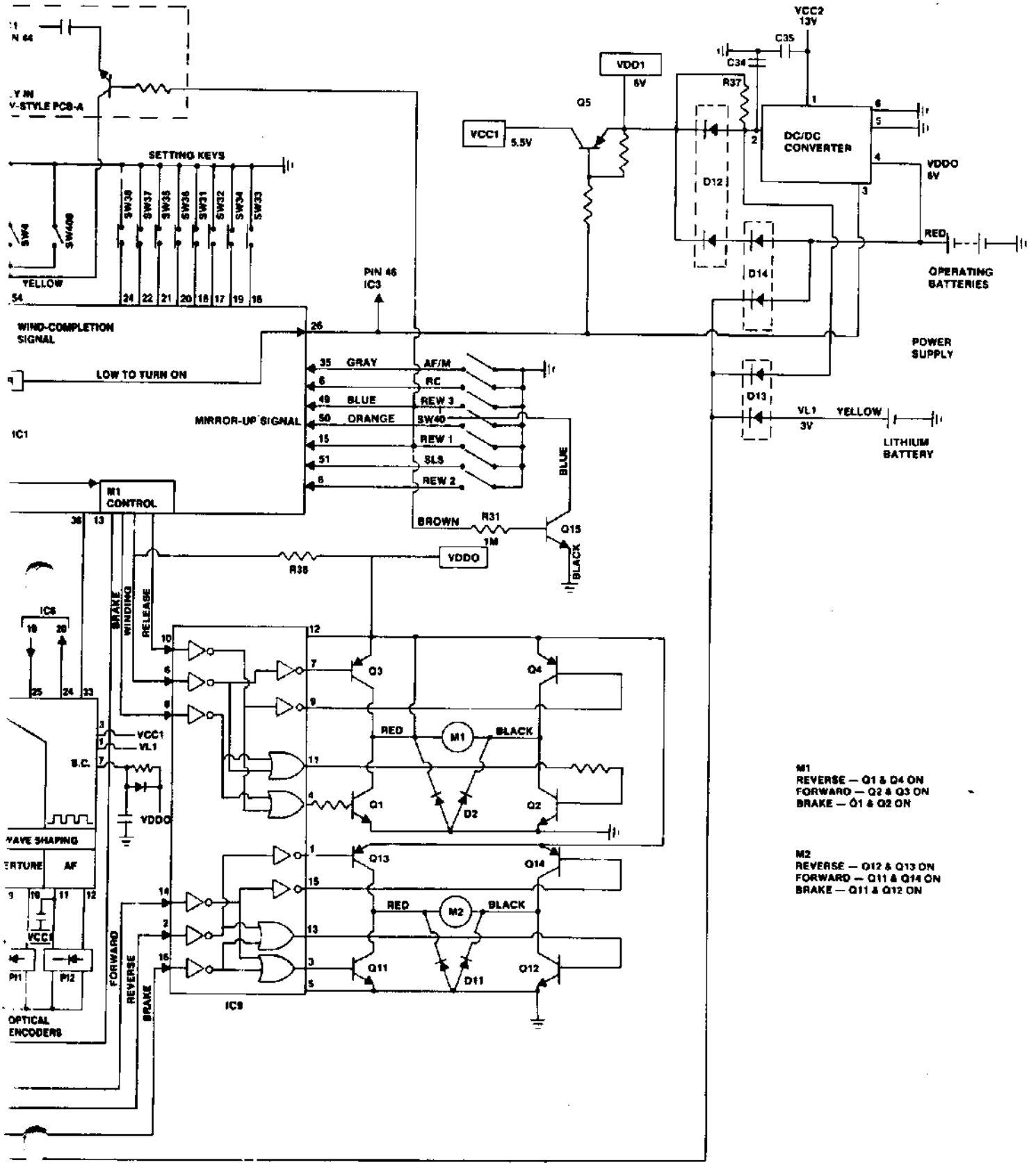

VDD1
8V
ORANGE
PURPLE
WHITE
BLUE
LD5
LD6
LD7
FOCUS LED'S
SUB MIRROR
VCC2
VCC1
FOCUS SIGNAL
VR4
IC6
AF CPU
CLEAR
RESET SWITCHES
SW30
SW300
CCD
IC7
AF BUS 3
IC8
SHIFT REGISTER
AF BUS 2
AF MOTOR CONTROL
AF BUS 1
SW0
SW1
SW2
SW-M
SW-AEL
SW-M
GRAY
PIN 26 IC1
L WITH SO CLOSED
XL2
LD8
FLASH-READY
6V
OSC
GND
CLOCK
WAVE SHAPING & FREQUENCY DIVIDER
METER
AF ON
RELEASE
LCD DISPLAYS
LCD DRIVER
IC3
XL1
MASTER CLOCK 5MHZ
L-DISABLES H-ENABLES
5.5V
MIN/MAX APERTURE
FOCAL LENGTH
LENS CONTACTS
Q16
POWER-UP RESET CIRCUIT
DELAY CAP
C9
C33
CAD
C6
L WHEN SHUTTER RELEASES
APERTURE CAP
C13
C14
BC ADJ
A/D CLOCK
D/A CONVERTING FOR FLASH
A/D SIGNAL FOR 3V
FLASH-STOP SIGNAL
FLASH-START SIGNAL
IC4 I/O
SPC1
SPC2 FLASH
A/D CONVERTER
C7
R6
AUTO ADJ
FLASH ADJ
R9
C8
IC2
VR1 A/D REFERENCE
L TO BLINK LCD
APERTURE
2ND CURTAIN
1ST CURTAIN
SELF TIMER
LCD ILLUMIN
HOT-SHOE CONTACTS
YELLOW
WHITE
RED
SL5
SL4
SL3
LD1
LD2
DX CONTACTS
IC5
ISO, FRAME MEMORY
LITHIUM BATTERY INPUT
CLOCK
ISO

FIGURE 34


VCC2
13V
C35
C34
VDD1
6V
R37
Q5
VCC1
5.5V
DC/DC
CONVERTER
VDDO
6V
D12
D14
RED
OPERATING
BATTERIES
POWER
SUPPLY
D13
VL1
3V
YELLOW
LITHIUM
BATTERY
SETTING KEYS
SW39
SW38
SW37
SW35
SW36
SW31
SW32
SW34
SW33
SW4
SW40B
YELLOW
PIN 46
IC3
WIND-COMPLETION
SIGNAL
LOW TO TURN ON
MIRROR-UP SIGNAL
GRAY
BLUE
ORANGE
AF/M
RC
REW 3
SW40
REW 1
SLS
REW 2
BLUE
BROWN
R31
1M
Q15
BLACK
VDDO
R38
R1
CONTROL
IC1
IC8
BRAKE
WINDING
RELEASE
VCC1
VL1
S.C.
VDDO
WAVE SHAPING
AF
IP11
IP12
OPTICAL
ENCODERS
FORWARD
REVERSE
BRAKE
IC9
Q3
Q4
RED
M1
BLACK
Q1
D2
Q2
Q13
Q14
RED
M2
BLACK
Q11
D11
Q12
M1
REVERSE — Q1 & Q4 ON
FORWARD — Q2 & Q3 ON
BRAKE — Q1 & Q2 ON
M2
REVERSE — Q12 & Q13 ON
FORWARD — Q11 & Q14 ON
BRAKE — Q11 & Q12 ON

SECTION II — MINOLTA AF 50mm f/1.7 lens (standard lens for Maxxum)

Note: The fixed-focal-length Maxxum lenses can be adjusted using standard test equipment. However, the zoom lenses require special tools for setting the position of the brush (the brush relates the zoom setting to the camera's AF microprocesor).

Fig. 1—front view, hood set and front lens group removed
Fig. 2—back view, bayonet ring removed
Fig. 3—helicoid set, back view

ADJUSTMENT LOCATIONS:

Focus	A
Diaphragm size	B

DISASSEMBLY HIGHLIGHTS:

Note: Both the front lens group and the rear lens group can be installed in any one of three rotational positions. Mark the position before removing the lens group. Or use a projection test to determine the best of the three positions for each group.

Sequence:
1. unscrew nameplate ring
2. remove hood set (filter ring) — 3 screws, front
3. remove front lens group — 3 screws, front
4. remove bayonet mount — 4 screws, back
5. lift out coupler, Fig. 2 (no timing)
6. remove rear lens group — 3 screws
7. remove diaphragm pressure spring, Fig. 1 (cemented at 3 points)
8. remove diaphragm parts (diaphragm pressure ring, diaphragm leaves, diaphragm-operating plate)
9. remove focus-ring clamping ring — 6 screws, front
10. remove focus ring
11. remove helicoid-retaining ring — 3 screws, front
12. separate helicoid set from distance-scale ring
13. remove helical guides
14. unscrew helical rings

Reassembly highlights:

1. Screw in the outer helical ring (geared ring) until it's against the aluminum helical ring (fixed ring). Then back out the outer helical ring 1¼ turn (CCW as seen from the front).
2. Screw in the inner helical ring (ring that mounts the lenses) until its rear surface is 0.6mm above the back geared surface of the outer helical ring, Fig. 3 (1 thread showing). The helical-guide slot next to the slot for the diaphragm-operating pin should now be adjacent to the helical-guide mounting position as shown in Fig. 3. If not, change the starting thread of the inner helical ring.
3. Replace the helical guides. Adjust the positions for free movement of the helicoid.

Note: In many lenses, the adjustment on the helical guides is to eliminate free play. However, with the Maxxum lenses, free movement is critical. It's normal to have some play in the helicoid.

4. Seat the helicoid set in the distance-scale ring; key the

Section 2 - Minolta AF 50mm f/1.7 lens

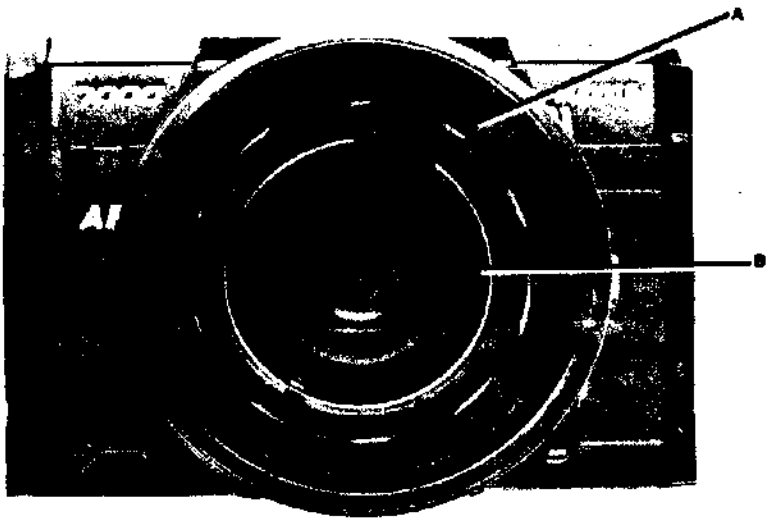


FIGURE 1

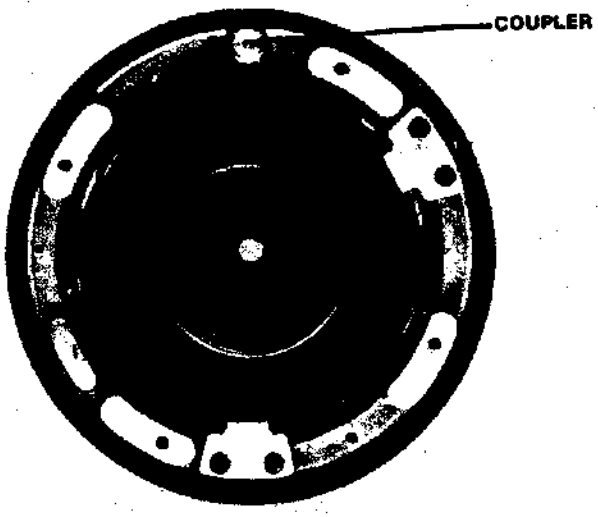


FIGURE 2

locating screw on the helicoid set to the locating slot in the distance-scale ring.

5. Replace the helical-retaining ring with its three screws. The bends at each screw-hole position go down (toward the distance-scale ring). The slot in the helical-retaining ring straddles the focus-ring stop tab on the distance-scale ring.
6. Assemble the diaphragm leaves in clockwise rotation on the back of the diaphragm pressure ring (the ring with the holes for the diaphragm pins). Then seat the diaphragm-operating plate over the leaves. Turn the diaphragm-operating plate to fully open the diaphragm.
7. Hold the helicoid set upside down and replace the diaphragm assembly from the bottom. Pass the operating pin through the helicoid slot.
8. With the diaphragm fully open, rotate the assembly until the operating pin is against the clockwise end of the slot (as seen from the back). Replace the diaphragm pressure spring, but don't cement the position until you've checked the aperture size.
9. Replace the rear lens group and the coupler, Fig. 2. Seat the bayonet mount with the fork of the diaphragm-control ring straddling the operating pin.
10. Check the light transmission to set the aperture size. Rotate the diaphragm pressure plate, Fig. 1, clockwise for a larger f/stop or counterclockwise for a smaller f/stop. Then use lacquer at three points on the diaphragm-pressure spring to lock the adjustment.
11. Replace the front lens group and the focus ring. Adjust the position of the focus ring for best infinity focus.

Other comments:

1. The helicoid set comes as a complete unit (3 rings) — 2550-0232-01. The helical guides are available separately — 2550-1375-01.
2. Hood set — 2550-0020-01.
3. Diaphragm leaves — 2550-0371-01.
4. The IC (ROM) comes with the lens-contact board 2550-0501-01 (held by 2 screws to the rear light-shield ring).
5. Use the same part numbers for the 50mm f/1.4 lens. But change the product number (first number) to 2562.

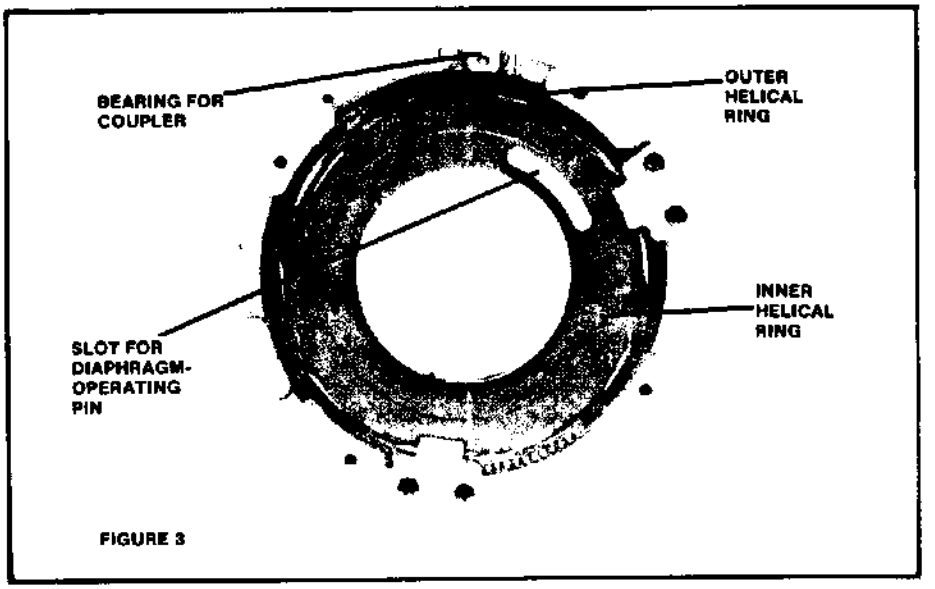


FIGURE 3

SECTION 3

5000 Winding-base Plate Set

Section 3 - Winding-base Plate Set

The Maxxum 5000 (product #2073), a less-expensive version of the 7000, uses a slightly different winding-base plate set, Fig. 1. The latest 7000 cameras also use the new-style unit. Although the operation is the same, the units don't interchange. The modification also affects interchangeability of some other parts.

Fig. 1 compares the new-style with the old-style. In the new-style, the changeover gear and the sprocket axis remain in the camera body when you remove the winding-base plate set. These parts remain with the new style, Fig. 1. A screw at the top of the winding-base plate holds the sprocket axis, keeping the parts in place.

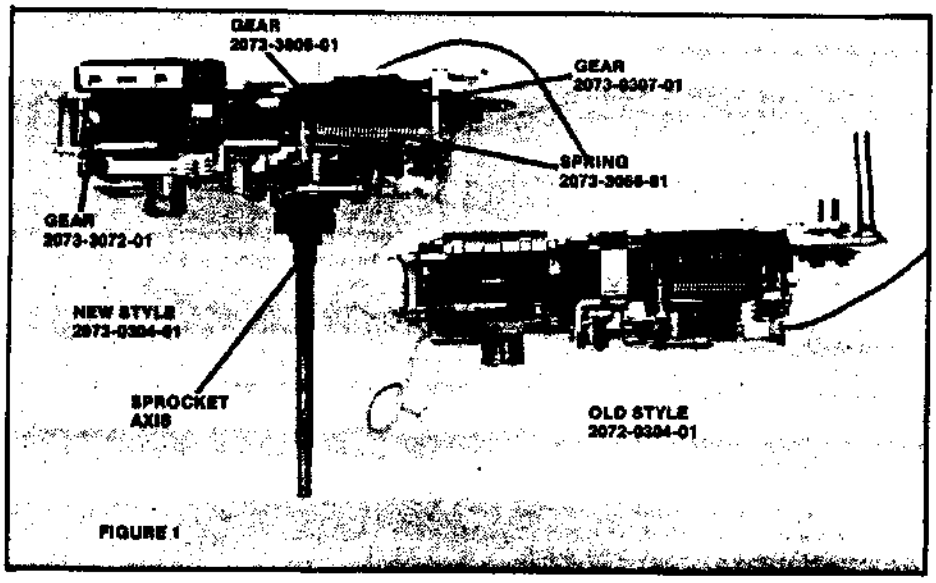


FIGURE 1

You can identify the type of winding-base plate set after removing the top cover of the camera. If the camera has the new style, the rewind gears 2072-3309-01 by the eyelens are the same length (in the old style, the gear at the wind end of the camera is shorter).

In the new style, pushing the rewind lever allows the changeover gear to move up — just as with the old style. In addition, the slide that closes REW SW1 comes against the tab on the changeover lever, Fig. 2. The changeover lever now allows gear 0335 to move into engagement with gear 3307, Fig. 2, as the motor runs to rewind the film.

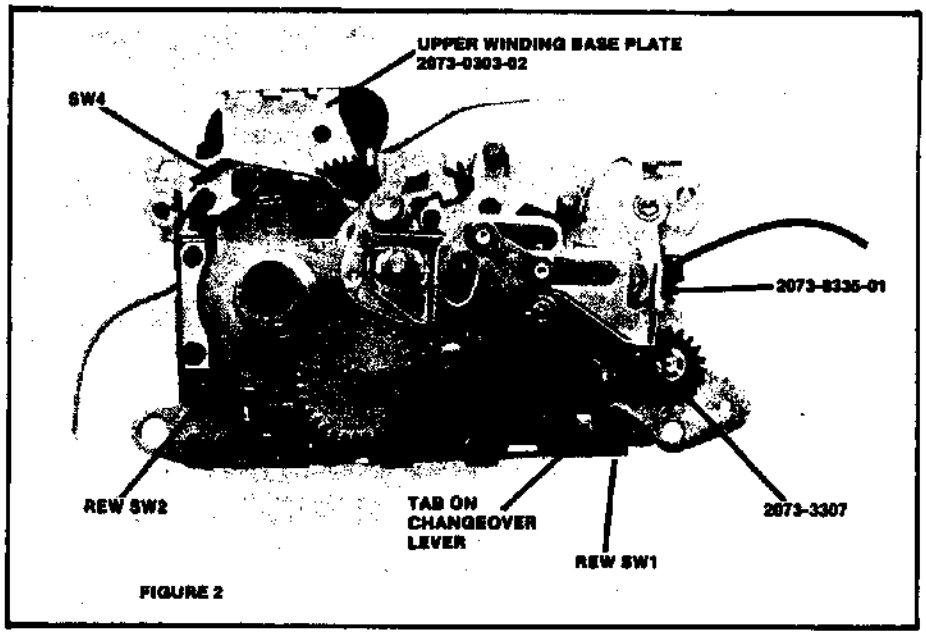


FIGURE 2

Gear 3307 engages a gear on the camera body that turns the rewind gears by the eyelens. The camera-body gear 3320 is loose when you remove the winding-gear unit.

The timing of the new-style winding gear unit is the same as described for the earlier style. Just be sure that the changeover lever couples to the lever that carries gear 0335, Fig. 2. Check by pushing gear 0335 into engagement with gear 3307. When you release 0335, the spring-loaded changeover lever should move gear 0335 away from gear 3307.

The tab on top of the new-style winding-gear unit goes to switch AEL. A green wire connects the AEL tab to PCB-A, Fig. 3. The new-style PCB-A has a cutout section as shown in Fig. 3 for clearance.

A camera with the new-style winding-gear set also has a different top cover. Use top cover 2072-0136-03 if the camera has the new-style winding-base plate.

Many of the parts in the winding-base plate set will interchange with those in the old style. The parts indicated with part numbers (2073, the product number for the 5000) in Fig. 1 and Fig. 2 are exclusively for the new style.

To install the new-style winding-base plate, temporarily replace the plate that has the post for the rewind gear (this plate, 2073-0336-01, isn't used with the earlier style). Seat the gear 3320 on the small post of the plate. Place the spacer over the hole on plate 0336. Then replace the winding-base plate set. Turn the sprocket until the winding-base plate set seats fully.

Installing the new-style winding-base plate set in a camera that originally had the earlier style

requires changing several parts -
— rewinding-base plate - replace with new style (for 5000) -2073-0331-01
— flexible board base plate set - replace with new style 2072-0384-01
— rewind gear - replace the short rewind gear 3319 with another long gear 2072-3309-01
— eyelens frame - replace with new-style 2072-1009-03.

It's also necessary to add the coupling gear and plate to link the winding-base plate set with the rewind gears —
gear 2073-3320-01
spacer 2073-3320-01
plate 2073-0336-01.

In addition, the flex circuit PCB-A must be replaced or cut for clearance as shown in Fig. 3. However, since you can still get the old style winding-base plate set — and since you can obtain individual parts for the winding-base plate set — it should not be necessary to make such modifications.

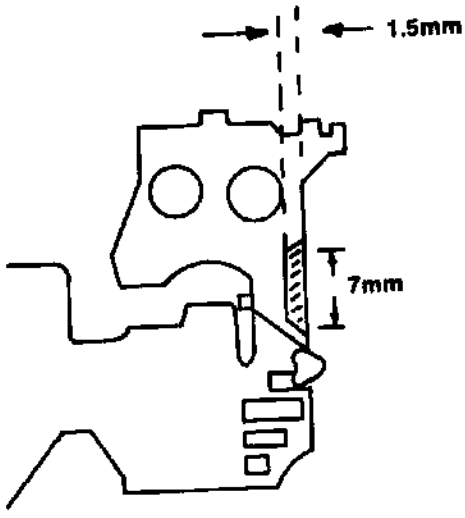


FIGURE 3